Our Environment and Our Natural Resources . . .

Indivisibly One

United States Department of the Interior

Conservation Yearbook Series, Number 8

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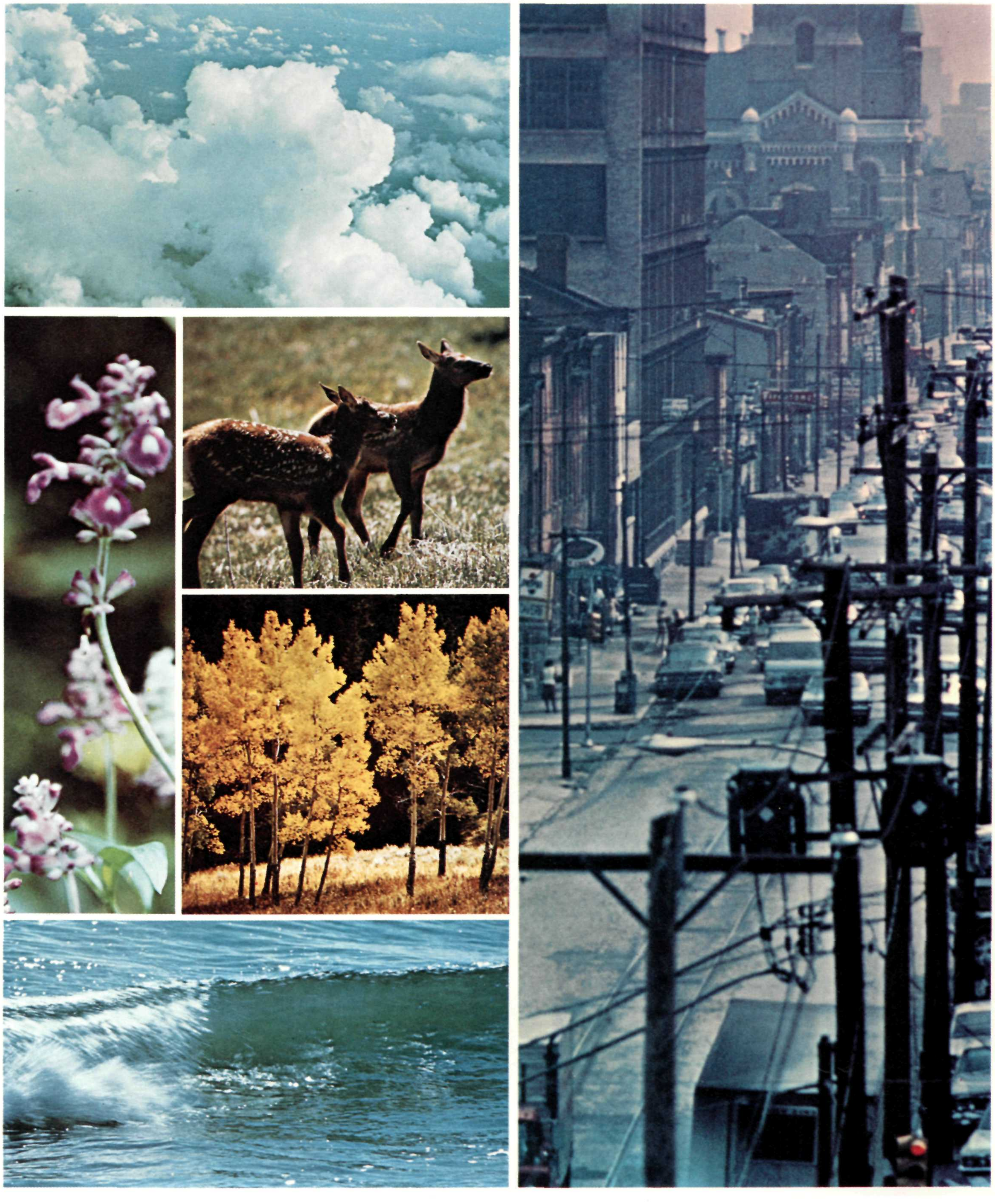
Rogers C. B. Morton, Secretary



Foreword

From the very first,
the American spirit has been
one of self-reliance
and confident action.
Always we have been a people
to say with Henley
''I am the master of my fate . . .
the captain of my soul''
– a people sure that man
commands his own destiny.
What has dawned dramatically
upon us in recent years, though,
is a new recognition
that to a significant extent
man commands as well
the very destiny of this planet
where he lives,
and the destiny of all life upon it.
We have even begun to see
that these destinies
are not separate at all –
that in fact they are
indivisibly one.

President Richard Nixon
The White House
February 8, 1972

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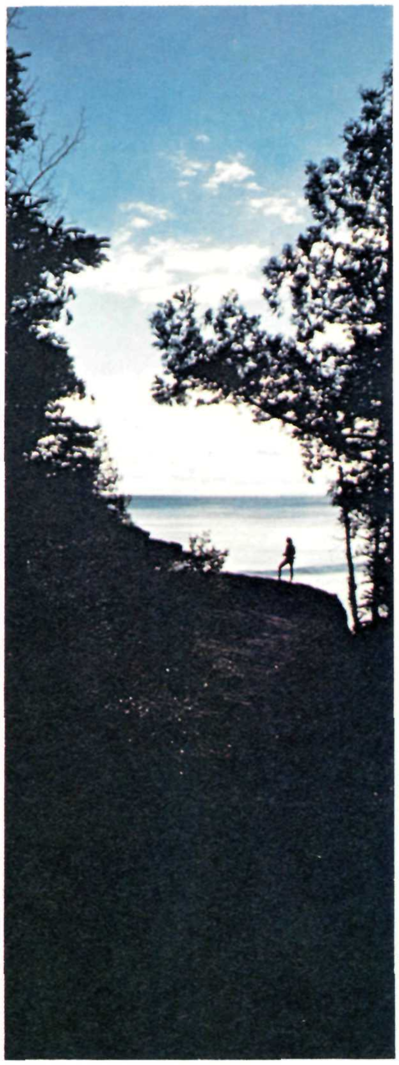
Man has exploited the earth for thousands of years—exploring, settling, and making changes to fit his particular needs.

Human survival has been accomplished at an increasing cost to earth's resources and man has found his survival depends as much on other forms of life as on himself.

Life on earth is indivisibly one.

In this section, Secretary Morton discusses environmental problems and stresses the hope for a better life on this planet. The Secretary points out that man must zealously protect the environment if he is to assure the future of all life on earth.



14 • Laws for a Changing Land

As President Nixon has said, environmental concern must crystallize into permanent patterns of thought and action. What began as environmental awakening must mature into a new and higher environmental way of life. In "Laws for a Changing Land", an idea is given of how new legislation is helping to bring this about.

More major legislation has been enacted during the past few years which directly affects our environment than at any other time. But many vitally significant environmental proposals are still before Congress. Some key legislation in both categories is described in this section.

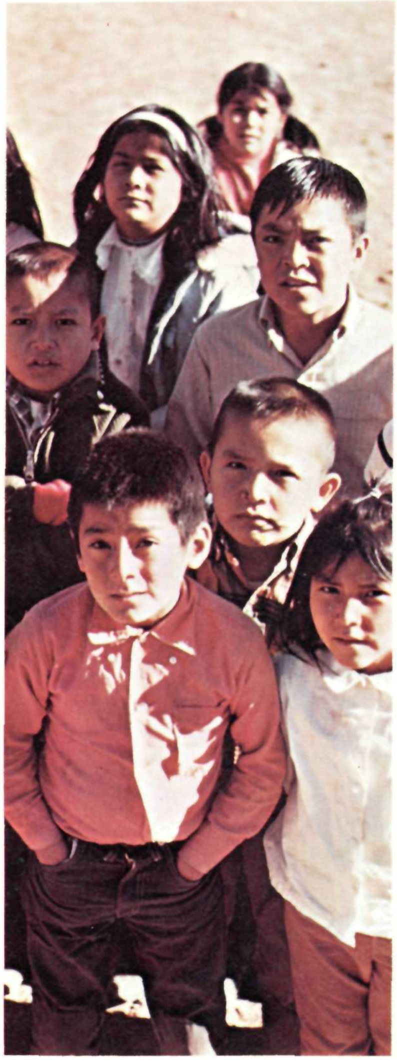
30 • Energy for Living

In announcing a broad program for expanding present energy sources and developing new ones, President Nixon told Congress June 4, 1971: "A sufficient supply of clean energy is essential if we are to sustain healthy economic growth and improve the quality of our daily life."

In "Energy for Living," some key Department of the Interior programs designed to help achieve this goal are discussed. Among them are leasing on the Outer Continental Shelf, oil shale, geothermal energy, coal gasification, studies relating to the Trans-Alaska Pipeline and water development in the western states.

56 • People in Transition

Although most of Interior's activities pertain to natural resources protection, management and development, it is also charged with major responsibilities in the area of human resources. Because of its long-standing trusteeship over most American Indian and Alaskan Native lands, because of its international trusteeship role with respect to former Japanese-mandated islands of the Pacific, and because of its administering authority over the U.S. territories of the Virgin Islands, Guam and American Samoa, the Department today is involved with transitions in life among Indians and islanders.



70 • With Us On Earth

America's proud heritage of wildlife is in trouble, from the majestic eagle and the fighting Atlantic salmon to many species that are in imminent danger of extinction. Nearly all the problems stem from man's disruption of the environment as he reshapes the wild places and natural systems for his own convenience—often without adequate consideration for his fellow creatures' survival. Yet there is still hope, and still time to check the trend. A growing number of concerned Americans are making their voices heard, and their Government now heeds them as never before.

78 • Saving the Scene

On January 5, 1972, President Nixon proclaimed the official beginning of the National Parks Centennial Year. He noted that in the century since Yellowstone was authorized, the National Park System has grown to include 280 areas embracing the most magnificent examples of America's natural and historical heritage.

In this "Saving the Scene" section, the dramatic story of the progress the Nation has made in establishing park and wilderness and recreation areas is highlighted.

The Interior Department's relationship and contributions to the arts in recent years is also traced.

America's great variety of natural resources are bountiful, but must be used wisely.

Indivisibly One

In stressing environmental objectives, President Nixon has expressed the belief that man—to a significant extent—commands the destiny of the planet where he lives and the destiny of all life upon it.

These destinies are not separate, the President pointed out, but rather are "indivisibly one."

Man enjoys his earthly life because countless and varied forms of life—microbes, plants, and animals—provide him an integrated living structure. If one element of the chain of life is seriously disturbed, other elements are affected. As John Muir told us in the last century, everything is connected to something else.

What happens thousands of miles from where one individual or millions of people live ultimately affects their environment.

We have the technology and assets to protect and improve our environment. It would be the sheerest of follies not to follow a course that offers reasonable hope for a better life on our planet.

In consonance with actions taken to protect the environment, we have launched unprecedented efforts to assure that America's soaring energy needs will be met without environmental degradation.

In accord with the President's "Clean Energy Message," we are pushing for new ways to produce energy through coal gasification, oil shale and geothermal steam development, and acceleration of oil and gas production on the Outer Continental Shelf.

We are proud of our efforts to advance the well being of people.

Interior's Bureau of Indian Affairs was reorganized to carry out President Nixon's program of "self determination without termination" by America's Indians. The emphasis has switched to tribal solutions for tribal problems.

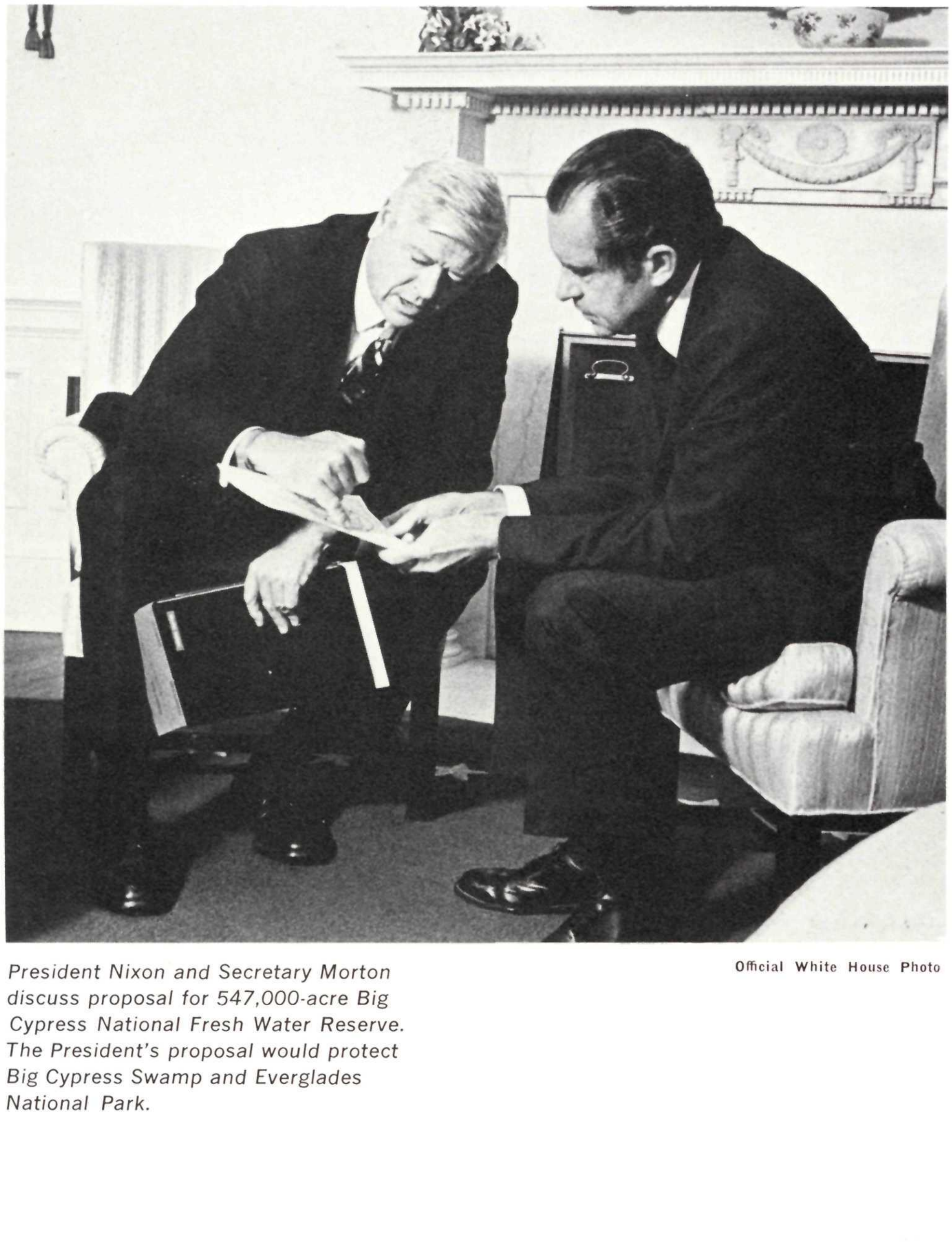
To provide greater protection and safety for the men who work the Nation's coal mines, safety standards have been upgraded. Mine inspectors in the field have quadrupled, and money for the Bureau of Mines Health and Safety Program has increased almost sevenfold.

We have a tremendous incentive —our future—for setting aside wilderness areas, carefully regulating predator control on public lands, protecting the fragile coastal and estuarine wetlands, adding to existing national parklands, establishing new park and recreation areas, and promoting the wise use of our environment.

The President already has signed into law legislation authorizing two additions to the National

Park System: Voyageurs National Park on the Minnesota-Canadian border and Gulf Islands National Seashore, extending 150 miles on offshore islands and keys between Gulfport, Mississippi, and Destin, Florida.

He also signed legislation upgrading Capitol Reef and Arches National Monuments in Utah into National Parks and changing the Chesapeake and Ohio Canal near the Nation's Capital from a National Monument to a National Historical Park.



President Nixon and Secretary Morton discuss proposal for 547,000-acre Big Cypress National Fresh Water Reserve. The President's proposal would protect Big Cypress Swamp and Everglades National Park.

Official White House Photo

At the direction of the President, legislation has gone to Congress to create in Florida a 547,000-acre Big Cypress National Fresh Water Reserve—so that Big Cypress Swamp and the unique ecology of Everglades National Park can be permanently protected.

The need to provide recreation opportunities for large urban centers is a major concern. To promote this concept, the President has asked Congress to establish national recreation areas in two of the Nation's major gateways to the world—New York City and San Francisco.

We have had since 1969 stringent regulations that govern oil and gas leasing operations on the entire U.S. Outer Continental Shelf. Under those rules, before a decision is made to offer leases for sale, full consideration is given to all environmental factors, including aquatic resources, aesthetics, and recreation.

In furtherance of those aims, we have proposed in legislation a comprehensive solution to the problems of oil and gas development in the Santa Barbara channel, including legal machinery for placing these mineral resources in a national trust for emergency use and setting up a fund to compensate owners of terminated oil and gas leases.

To protect an endangered species, we denied a request by an oil company to extend oil and gas leases within the Los Padres National Forest's Sespe Condor Sanctuary in California. That action was taken to protect the California condor, one of the country's most endangered species of birds. Fewer than 50 of those great birds are said to still survive.

Following submission of recommendations by this Administration and intensive consideration in Congress, President Nixon signed into law legislation to bring a fair and equitable settlement to land claims of Alaska's natives.

We can look with pride and satisfaction on this achievement. The Native Claims Act approved by the President provides for settlement of land claims by the payment of $962.5 million and 40 million acres of land. That action ended a struggle which had been going since the United States purchased Alaska from Russia in 1867. Natives have until March 30, 1973, to apply for enrollment on eligibility rolls.

Secretary Morton, standing on abandoned automobile top, looks over portion of proposed Gateway National Recreation Area in New York and New Jersey; below, engrossing view of Big Cypress Swamp; right, sidewalk scene at King Cove, Alaska, where residents have keen interest in Native Claims Settlement Act.

Resources of Federal, State, and local governments are being increasingly mobilized on behalf of environmental quality. Some organizational reshaping of the Federal structure—notably the establishment of the Council on Environmental Quality and the Environmental Protection Agency—already has taken place and several important recommendations are before the Congress.

At the international level, the first world conference on the human environment took place this year at Stockholm so that nations could discuss shared problems of global concern. Conferences, however, can do only limited good.

To improve global environment, President Nixon has proposed a voluntary United Nations Fund for the Environment with an initial funding goal of $100 million for the first five years.

This Fund would stimulate international cooperation on environmental problems by supporting a centralized coordination point for United Nations activities in this area. It would also bring new resources to bear on worldwide problems through such activities as monitoring and cleaning the oceans and the atmosphere. This proposal is a signal for a commitment from other nations to join us in meaningful action.

We must devise new concepts—build new bridges—to attain the objectives important to all of us in the 20th Century and beyond. We can neither go back nor stand still. We must plan—and act—anew.

Our way of life depends largely on an effective national land use planning effort. The land ethics we bequeath future generations are at stake.

In the past, the single-minded manner in which we pursued development goals often blinded us to future environmental consequences. Look around even now and observe the continued migrations of people to high density areas which lack many amenities of modern living. Wouldn't they have chosen to remain in their homes if their mode of living had been good?

Land is our basic resource. If it is used wisely, everyone will benefit. If it is used unwisely, many will suffer.

The Administration's proposed National Land Use Policy Act will move us closer to a cleaner, healthier environment. That Act would give the States primary control over land use, requiring them to exercise authority most have relinquished, and thus assure that decisions affecting land be based on sound environmental practices. Grants also would help States create land use planning agencies with enough muscle to assure the control States need.

Local zoning ordinances—the traditional tool for handling land use problems—do not deal adequately with issues that spill over boundaries or that involve statewide policies. Frequently, local regulations hinder, rather than assist, coordinated planning.

Another important feature of the Act is that State programs established would not only have to control land use *around* key growth-inducing changes such as highways, airports and recreation facilities, but would also control the actual *siting* of such developments.

To help put our environmental house in order, we urgently need a Department of Natural Resources as recommended by President Nixon.

Responsibility at the Federal level for energy, land resources, recreation, water, and earth sciences now is spread among dozens of departments and agencies.

I have found strong support among Members of Congress, conservation organizations and the private sector to establish a natural resources department. To function efficiently, inspire confidence, and gain the respect it deserves, a government department must be able to respond effectively to the people it serves. A unified resources department would permit us to meet those objectives.

> ***"... We can neither go back nor stand still. We must plan—and act—anew."***

The need for coordinated action is pressing. I don't believe we dare wait any longer to start developing a national energy policy. I have directed the staff at Interior to develop a National Energy Policy that would unite Federal energy programs into a forward-looking cohesive effort. Hopefully, this recommendation will become the basis for a coordinated energy program in the new DNR.

Water is another crucial interest. Today, water resource developments are handled by three Federal departments. In a Department of Natural Resources, activities of all three would operate under a single coordinated direction and help assure that Federal money and effort are not wasted.

It is time to stop wasting the energies of the people. Proper Federal organization in the resources area can make clear the role of the States, local governments, private industry, and private citizens. Effective leadership—not always control—must be exercised at the Federal level if we are to develop meaningful resource programs for all sections of the country.

Archaic mining laws, if left unchanged, will continue to spoil our environment and deter effective use of valuable resources.

We have sent Congress proposals to modify the Mining Law of 1872 and the Mineral Leasing Act of 1920, plus a Mined Area Protection Bill to correct adverse environmental effects resulting from production of coal and other hard minerals.

Our proposals to change the laws of 1872 and 1920 provide greater environmental protection on hundreds of millions of acres of federally owned lands from which are extracted minerals, fuels, and construction materials.

Under the revision proposed, we would retain a location-patent system for hardrock minerals, such as gold and copper, thus assuring a continued role for individual prospectors, and competitive leasing for oil, gas and "bedded" minerals, such as coal and phosphates. This would assure more economic return to the public and stronger emphasis on environmental protection.

Adverse environmental effects traceable to mining operations have become a growing national concern. An ever-increasing demand for minerals—coupled with greater ability to recover them—has led to a dramatic increase in mining activity.

Our Mined Area Reclamation proposal would regulate exploration, mining and mineral-related activity to encourage maximum environmental protection and reclamation. The proposal covers all surface and underground mines. It would establish basic environmental criteria and national mining guidelines. States would be given initial authority to develop mining laws in compliance with Federal law. If a State failed to develop approved legislation, however, the Federal Government would be empowered to enforce environmental regulations for mineral production in that State.

Last year, I transferred my office for one month to Denver in what was known as "Operation West."

Strip mining presents serious environmental problems in many parts of the country. The Mined Area Protection proposal would correct adverse effects of strip mining.

During "Operation West" Secretary Morton journeyed to cities, towns and backcountry. He is shown with a golden eagle for whose progeny he dedicated a special sanctuary in Idaho.

During that time I traveled some 15,000 miles on an unprecedented fact-finding mission. It was one of my most rewarding undertakings as Secretary of the Interior.

I journeyed to cities, towns and back country by auto, airplane, helicopter, boat, and horseback. I talked with the people of the West and learned a great deal about their problems and opportunities.

Swimming in the clear, cold waters of the Colorado River was refreshing; walking in the dark caverns of an oil shale mine was exciting; and holding on my arm a golden eagle for whose progeny I dedicated a special sanctuary in Idaho was indeed a poignant experience.

I was able to see and hear explained a full range of environmentally-oriented issues, such as the effect of over-crowding in national parks, salinity problems on the Colorado River, the complexities of Indian water rights, on-site conservation practices of timber and mineral industries, new policies affecting conservation and the use of energy, and the development of standards to maintain the quality of our air and water.

The extensive trip in the West added significantly to my understanding of that area.

Looking ahead, I see no lessening of demand for goods and services among the people of the world. In fact, demand for materials is on an upward curve throughout the world society.

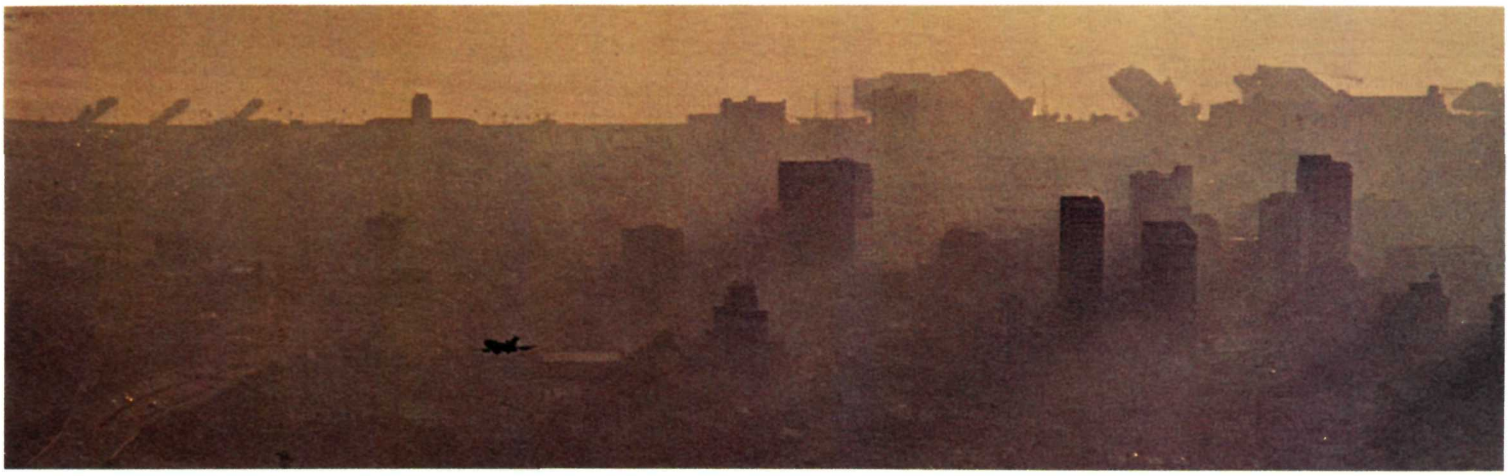
Therefore, let us reduce waste, develop efficient production methods, salvage and reuse materials, and conserve our resources. We will need everything going for us to make our environment safe and pleasant.

The resources of this spaceship earth are finite. By planning and acting wisely, we can help assure not just our survival but the quality of our over-all environment which will make survival increasingly worthwhile.

We can look forward to a new era in the relationship between man and his environment, however, only if we develop and observe an environmental ethic that recognizes that we are *indivisibly one* and embraces interdependence of all forms of life here on earth.

Rogers CB Morton

Rogers C. B. Morton
Secretary of the Interior



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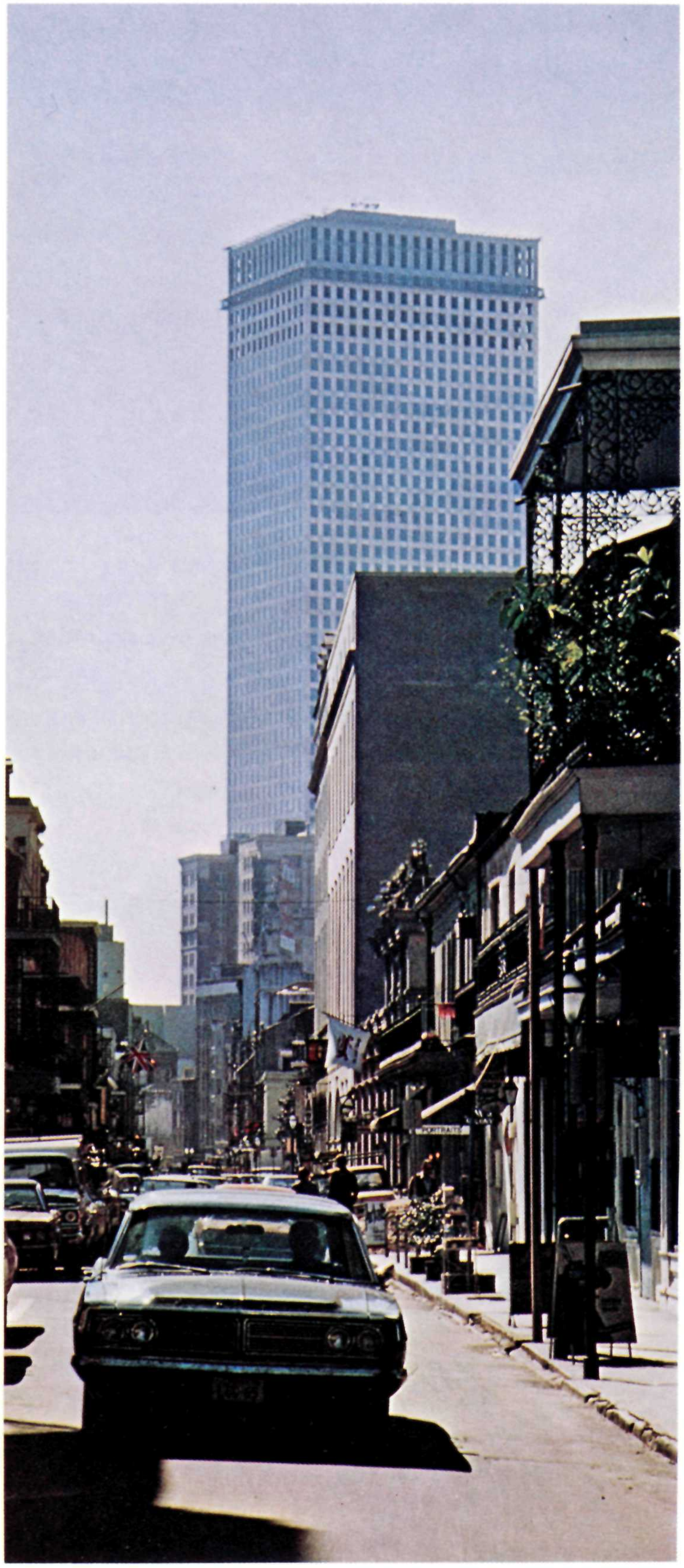

Laws for a Changing Land

More major legislation has undoubtedly been enacted during the last few years which directly affects the future of the land and of our environment than at any other time. And many vitally significant legislative proposals in the environmental and land area are still before the Congress.

Under our democratic system, it is through the legislative process that the fundamental changes are made which make it possible for us to set new courses, to correct inequities, and, simply, to update our methods of meeting old problems and new challenges.

The new courses which have been set in the past few years have profoundly affected this decade and will alter the course of this century. Nevertheless, much urgently required legislation remains to be acted on if we are to assure that the pressing needs of our people are met during the last third of the twentieth century while our environment is restored to its delicate balance.

As 1972 began, indeed, President Nixon noted that the most striking fact about environmental legislation in the early 1970's was how much had been proposed and how little had been enacted. He called on the Congress to approach the task in a continuing spirit of partnership between the President and the Congress and in a spirit of realism and reason.

In this brief discussion of "Laws for a Changing Land," emphasis is given to those major laws enacted or proposed in the past few years which affect the land and other responsibilities of the Department of the Interior.

As President Nixon has said, environmental concern must crystallize into permanent patterns of thought and action. What began as environmental awakening must mature finally into a new and higher environmental way of life.

As the year began, there were many important measures in the environmental area and within the responsibility of the Department of the Interior on which action was viewed as essential.

Among the President's new proposals in his environmental message in February 1972 was legislation to provide for early identification and protection of endangered species. The President's proposal would make the taking of endangered species a Federal offense for the first time, and would permit protective measures to be undertaken before a species is so depleted that regeneration is difficult or impossible.

Legislative approval was also sought by the President for the Big Cypress National Fresh Water Reserve and new parklands at the eastern and western "gateways" of our country. The Big Cypress Reserve legislation would empower the Federal Government to acquire 547,000 acres of the Big Cypress Swamp in Florida. The recommendation was made by the President after careful review of the environmental significance of the Big Cypress area, particularly the need for water from this source to maintain the unique ecology of Everglades National Park.

Legislation was proposed by President Nixon in May of 1971 to authorize a Gateway National Recreation Area in New York and New Jersey. This would open to a metropolitan area of more than 14 million people a National Recreation Area offering more than 23,000 acres of prime beaches, wildlife preserves, and historical attractions including the nation's oldest operating lighthouse.

In his environmental message in February 1972, the President proposed legislation to establish a Golden Gate National Recreation Area in and around San Francisco Bay. This proposal would encompass a number of existing parks, military reservations, and private lands to provide a full range of recreation experiences.

In his environment message in February 1972, President Nixon proposed legislation to establish a Golden Gate National Recreation Area in and around San Francisco.

Altogether, the area would encompass some 24,000 acres of fine beaches, rugged coasts, and readily accessible urban parklands, extending about 30 miles along some of America's most beautiful coastline north and south of Golden Gate Bridge.

The President's message also proposed 18 new wilderness areas, including four within National Park System units and six in National Wildlife Refuges. The new areas would add another 1.3 million acres to the wilderness system.

The 40,000 acres which would be in the National Park system are: Black Canyon of the Gunnison National Monument, Colorado; Bryce Canyon National Park, Utah; Chiricahua National Monument, Arizona; and Colorado National Monument, Colorado.

About 87,000 acres would be in national wildlife refuges administered by the Department's Fish and Wildlife Service: St. Marks, Florida; Wolf Island, Georgia; Moosehorn, Maine; San Juan Islands, Washington; Cape Romain, South Carolina; and Bosque del Apache, New Mexico.

A significant part of the legislative history of any activity is to be found in the appropriations of funds by the Congress—and how they are used by the responsible executive agency. For fiscal year 1973, Secretary Morton has announced that new program thrusts by the Department of the Interior will stress improved environmental controls in resources development. Increased emphasis will also be given to providing the capacity to meet the Department's increasing responsibilities in mine health and safety, recreation development, and education and economic development for Indians and people of the Territories.

The importance of the "land" and related activities of Interior is reflected in the appropriation the Department requested for fiscal 1973—$2.6 billion, more than double the level only ten years ago. The ever-growing significance of sound land management programs is even more dramatically underlined by the fact that Interior's revenues from leasing of public lands are expected to exceed its budget requests in fiscal 1973 by more than a billion dollars.

If history is primarily a record of change, the "Laws for a Changing Land" discussed in this section constitute a small but significant part of the history of how America is changing to meet the land and environmental challenges of the seventies and, indeed, the 21st century.

Environmental Policy Act: Scrupulous Scrutiny

A drastic realignment in the way virtually every Federal agency conducts its activities affecting the environment has been under way since

1970, and it promises to continue growing.

Never before has so much careful study been given—in advance— to the possible environmental impacts of thousands of projects: highways, airports, other transportation systems; dams, pipelines and generating plants and transmission lines for electric power; piers, waterways, buildings and structures of all kinds; major mining and mineral leasing activities; programs to control or eradicate insect or plant infestations; the list goes on and on.

All this was brought about when President Nixon on January 1, 1970, signed into law the National Environmental Policy Act. The Act directed the creation of a three-member Council on Environmental Quality to advise the President and ordered Federal agencies to include consideration of the environmental impacts of proposed actions in their decisions.

As a result, every Federal agency now is required to submit for public inspection a draft environmental statement which describes the expected impact of each proposed major federal action that would have a significant effect on the quality of the human environment. The draft is circulated to Federal and State agencies with legal jurisdiction or special environmental expertise.

Public hearings may be held—and as time goes on, public participation continues to grow. After comments are received from official sources and the public, the originating agency prepares a final statement on the expected environmental impact of the proposed action, taking these outside comments into account.

The final environmental statement must be filed with the Council on Environmental Quality (CEQ), together with all official comments. To the maximum extent practicable, the originating Federal agency must wait 30 days before taking any action.

During that period and thereafter, the record must be kept open for public inspection.

Among other things, both the draft and final environmental statements (commonly called "102 statements," after Section 102 of the Act) must describe possible alternatives and their potential environmental impacts—including what would happen if the project were not undertaken at all.

Inevitably, this has led to a more thorough study of how impacts on the natural environment affect the lives of all Americans and how the possible alternatives influence their social and economic well-being. It has focused attention on the tangible and intangible costs of all kinds of proposed activities on the quality of the human environment.

Literally scores of these "102 statements" have been initiated by Interior Department bureaus and offices since the Act's inception and hundreds more—originated by other Federal agencies—have been commented upon by Interior.

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Environmentally-oriented citizen groups have gone to court repeatedly, and effectively, to challenge actions proposed by various Federal agencies. By mid-1972, a number of projects had been slowed down or brought to a halt by lawsuits and numerous others were being delayed because of the waiting periods made necessary by the system of reporting and cross-checking required.

Each major new court decision was being anxiously scrutinized by executive agencies, with attendant delay, to make certain they were following the latest interpretation of the law's requirements.

While it was perhaps still too early to assess the ultimate effects of the Act, there appeared to be general agreement that several major consequences had resulted:

(1) Far more careful planning to minimize adverse environmental effects was being put into Federal agency proposals.

(2) Many projects were being redesigned before their final execution—often at higher dollar costs—and some were being scrapped as unworthy.

(3) Public awareness of proposed government actions and informed public participation in Federal decision-making have been immeasurably increased.

(4) Decisions regarding many development projects have been delayed.

(5) The manpower and paperwork involved was huge—much larger than even the experts might have expected at the outset.

National Mining and Mineral Policy Act of 1970

Before World War II only two Federal agencies were doing work connected with developing the Nation's mineral resources. They were the Interior Department's Geological Survey (established 1879) and the Department's Bureau of Mines (established 1910). The Survey mapped the geology and topography of American public lands (mostly in the West) and the Bureau conducted research in mining and metallurgical technology. These activities by the two Interior agencies were an important, but indirect, help to the Nation's minerals industries.

World War II found the country short of some of the minerals that were needed for the war effort. To help meet U.S. needs for critical minerals, the Geological Survey and the Bureau of Mines became directly involved in aid to the mineral industries, with efforts including exploration, development of new production methods, and establishment of government-managed plants.

After the war, the Bureau and the Survey completed a special report—the first of its kind—on the country's overall position with respect to minerals, the basic raw material foundation for all industry. The report gave the kind of information needed to develop a national minerals policy. However, the report was not widely known and was not updated for five years.

By 1950 the country's mineral industries again had to gear up for war—the Korean Conflict. This time, some emergency Federal agencies were set up, including the Defense Minerals Administration (DMA) in the Department of the Interior. During this period, the Secretary of the Interior and the DMA were actually in the business of finding and developing supplies of badly needed minerals, and were also awarding long-term contracts for delivery of mineral supplies from private industry. In addition, the Defense Minerals Exploration Administration (today the Office of Minerals Exploration, USGS) was created to subsidize minerals exploration by private industry.

In 1952 the President's Materials Policy Commission (Paley Commission) conducted a special study and issued a report on the Materials Position of the United States—in effect, an updated equivalent to the 1947 Bureau of Mines and Geological Survey Report.

In the late 1950's, the mineral industry and the Government wondered whether the productive capacity of wartime could be kept up in peacetime, and if it was possible to maintain the country's "mobilization base." Several Government measures were implemented to try to achieve this goal. Import limitations were set (e.g. oil quota system set up in 1959). Metals and ores were bought for the national stockpiles. Specific subsidy laws were enacted (e.g. lead-zinc).

However, these piecemeal measures did not add up to a coherent national mineral policy, designed to reach and keep the best attainable minerals position. In fact, by the late 1960's, the country's concern with natural resources had tilted toward parks, recreation, and ecology, and away from the mineral industry. Moreover, there were no war shortages to stimulate corrective actions. And in the Interior Department, the non-minerals areas were receiving much greater emphasis than mineral development programs.

In testimony in support of what became the Mining and Minerals Policy Act of 1970, Hollis M. Dole, Assistant Secretary of the Interior for Mineral Resources, said: "I seriously believe that our long range domestic mineral position is far more critical than any of us would like to think. We are not on the verge of a minerals shortage, but unless an aggressive program to improve our mining and minerals technology is launched now, America faces the possibility that our economic growth and hence our standard of living will begin to be limited by resource constraints within 20 to 30 years."

In passing the National Mining and Minerals Policy Act of 1970, the Congress declared that "it is the continuing policy of the Federal Government in the national interest to foster and encourage private enterprise" in developing America's mineral resources and industries, in conducting minerals research, and in combating the environmental effects of mineral wastes and mining.

The law directs the Secretary of the Interior to carry out this policy in two ways. First, he must implement it when exercising his authority under other laws. Second, he must keep the Congress abreast of all important developments affecting the domestic mineral industry, and recommend legislative programs that may be necessary to implement the Act. The recommendations need not be limited to laws dealing with the Interior Department or Interior programs; anything affecting the country's mineral resources could be included in such a recommendation by the Secretary. The means prescribed for keeping Congress posted, and making legislative recommendations, is an annual report on the state of the entire U.S. minerals industry.

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The law approved December 31, 1970, does not give the Secretary or the Department any new authority, but calls for the Secretary to carry out the national minerals policy when "exercising his authority under such programs as may be authorized by law other than [the] Act."

The National Land Use Policy Proposal

Through the past half-century the Nation's growth in population, its increase in industrialization, and the expansion of cities and suburbs have created a land-use crisis and made it impossible to ignore the need for the development of a National Land Use Policy. If the environment is to remain tolerable for people, we must intensify our efforts to plan for our future resource needs, and above all, for the use of land which is a vital basis for all resources. We can no longer accept the tenet that society benefits whenever and wherever there is any kind of growth; nor can we sustain the economic illusion that the more intensive the development, the better the community and society.

We can no longer treat land as if it were infinite; we know now that land is subject to the dimensions of quality and quantity. Yet the Nation's finite *land base must continue* to meet the total needs of the people. It must meet the increasing demands for food, clothing, and shelter; it must provide for transportation, communication, and industrial growth. It must produce the energy necessary for production, and for the convenience and health of a growing population.

In addition to all of this, the land must provide for the aesthetic needs of the individual. Open space for the spirit, vistas for the mind, and recreational opportunities for our leisure hours must come from the land.

If the environment is to remain tolerable for people, we must intensify efforts to plan for the future of the land, the vital base for all resources.

The Department's effort to come to grips with the challenge of reshaping our pattern of land use has two separate but related aspects—one pertaining to the Federal land managed by the Department and the other pertaining to non-Federal land.

The National Land Use Policy Act, which President Nixon proposed to the Congress in 1971, would provide Federal assistance to encourage the States, in cooperation with local governments, to protect lands which are of critical environmental concern and to control major development.

In President Nixon's environmental message to the Congress in February 1972, he proposed amendments to the then pending National Land Use Policy legislation which would require states to control the siting of major transportation facilities and impose sanctions on any State which does not establish an adequate land use program.

Under these amendments, the State programs established pursuant to the act would not only have to embody methods for controlling land use around key growth-inducing developments such as highways, airports, and recreational facilities; the States would also have to provide controls over the actual siting of the major highways and airports themselves. The proposed change recognized that these initial siting decisions, once made, can often trigger runaway growth and adverse environmental effects.

The proposed amendments would also provide that any State that had not established an acceptable land use program by 1975 would be subject to annual reductions of certain Federal funds. Seven percent of the funds allocated to the Land and Water Conservation Fund administered by this Department and the Airport and Federal-Aid Highway Acts would be withheld for each additional year a State was without an approved land use program. Money thus withheld from noncomplying States would be allocated among States which did have acceptable programs.

Special protection is proposed under the National Land Use Policy Act for the Nation's coastal and estuarine wetlands. These lands are vital to the survival of a wide variety of fish and wildlife; they have an important function in controlling floods and tidal forces; and they contain some of the most beautiful areas left on this continent. These same lands, however, are often some of the most sought-after for development. As a consequence, wetland acreage has been declining as more and more areas are drained and filled.

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> ***. . . A new maturity is giving rise to a land ethic which recognizes that improper land use affects the public interest . . .***
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By defining wetlands among the "environmentally critical areas" which it singles out for special protection, the National Land Use Policy Act would direct State attention to these important areas. Legislation has also been proposed by the President to supplement these safeguards with new economic disincentives to further discourage unnecessary development by limiting applicability of certain Federal tax benefits when development occurs in coastal wetlands.

A new maturity is giving rise to a land ethic which recognizes that improper land use affects the public interest and limits the choices that we and our descendants will have.

Now, the President has made clear, we must equip our institutions to carry out the responsibility implicit in this new outlook. We must create the administrative and regulatory mechanisms necessary to assure wise land use and to stop haphazard, wasteful, and environmentally damaging development. Some States are moving ahead on their own to develop stronger land-use institutions and controls. Federal programs can and should reinforce this encouraging trend.

BLM Organic Act Proposal

Public lands administered by the Bureau of Land Management are managed under a hodge-podge of laws dating back as far as the creation of the General Land Office in 1812. The Bureau of Land Management was created by the merger in 1946 of two other Federal agencies, the General Land Office and the Grazing Service.

Unlike other Federal land managing agencies, BLM has responsibility for managing 475 million acres of public land—more than all other agencies combined—and has some surface management responsibilities on additional millions of acres withdrawn for use by such other agencies as the Bureau of Reclamation, the Bureau of Sports Fisheries and Wildlife, and the Department of Defense. In addition, legislation passed in 1953 has added responsibility for managing mineral leasing on the Outer Continental Shelf which comprises some 800 million acres.

The Public Land Law Review Commission has reported that the body of approximately 3,000 public land laws is inadequate for the management of public lands in the light of modern demands and uses. The Department of the Interior has proposed up to date management authority for the public lands administered by the Bureau of Land Management.

In the main, this proposed organic act would give the Secretary of the Interior the authority he needs for the proper management and disposition of the public lands. The act as proposed would establish management objectives, leaving room for further legislation as needed; permit selective disposal of lands and management with appropriate safeguards for those lands retained; assure public participation in decision-making about the public lands; and would repeal non-applicable existing public land laws.

As President Nixon has declared, the legislation would establish something which we have been without for far too long—an overall management policy for these lands. The policy which it would establish declares the retention of the public lands to be in the national interest except where disposal of particular tracts would lead to a significant improvement in their management, or where the disposal would serve important public objectives which cannot be achieved on non-public lands.

Coal Mine Health and Safety Act of 1969

Since 1952, the Department of the Interior's Bureau of Mines has been empowered to enforce mandatory safety standards in the Nation's underground coal mines. In the late 1960's, however, it became apparent that the 1952 Federal coal mine safety law was inadequate.

The law's weakness was especially evident in two areas. First, the rate of fatal accidents in the Nation's coal mines had not dropped appreciably over the past two decades. Although a steady drop in the workforce as machines replaced miners resulted in fewer fatalities, the average of approximately one death per million man-hours of time underground changed little throughout the fifties and sixties. This made coal mining the most hazardous major industry in America.

The law's second weakness was its lack of health protection. Prolonged exposure to airborne coal dust can cause "black lung" (coal workers' pneumoconiosis, or CWP), a respiratory disease that can cripple and kill. As the sixties drew to a close the Nation became aware that black lung was a major health hazard in the mines. Hard figures on the incidence of the disease were unavailable but informed estimates place the incidence as high as ten percent among working miners; twenty percent among retired miners. Some believed that black lung killed more men annually than mine accidents.

Then, on November 20, 1968, one of America's largest coal mines blew up. One explosion after another racked the Consol Number 9 Mine, near Farmington, West Virginia, and 78 miners were lost. It was the worst coal mine disaster since the 1952 safety law had taken effect, and it seemed to to say to everyone that the law needed changing.

Artist's rendering of the proposed Mine Health and Safety Academy to be built by the Department's Bureau of Mines in Beckley, West Virginia.

The need was obvious to President Nixon when he took office. Less than two months after his inauguration, he sent a Special Message to the Congress on Coal Mine Safety. "The workers in the coal mining industry and their families have too long endured the constant threat and often sudden reality of disaster, disease and death," the President said. He ordered a strengthening of administrative procedures under the existing law, and announced, "I am submitting to the Congress legislative proposals for a comprehensive new program to provide a vigorous and multi-faceted attack on the health and safety dangers which prevail in the coal mining industry." The President signed the legislation into law on December 30, 1969.

Whereas the 1952 Act was general in its application, the 1969 Act was specific with regard to practically every phase of coal mining operations. Where the 1952 Act distinguished between "gassy" and so-called "non-gassy" mines, the 1969 Act removed that distinction. Now, all coal mines are classed as "gassy" and must be operated as such.

Five other things distinguish the Federal Coal Mine Health and Safety Act of 1969 from its predecessors. First, it provides coverage for the entire mine. The 1952 law did not protect miners from the single most serious hazard of underground coal mining—falling rock and coal at the mine "face" where the coal is cut. Now, mine operators must provide adequate roof support at the face, as well as in less dangerous parts of the mine.

Second, the new law protects the miners' health, as well as their safety. For example, it contains specific limits on the average concentrations of respirable coal dust that will be permitted in the mine.

Third, the 1969 law covers surface coal mines for the first time. In recent years the number of surface mines has been increasing, along with the percentage of miners employed at surface operations.

Fourth, the new law includes civil and criminal penalties for violators. Under the 1952 law, Bureau of Mines inspectors could close a mine where conditions of "imminent danger" existed or when an operator did not abate a notice of violation, but beyond this there were no enforcement tools. Now, penalties are being assessed for violations.

Fifth, and in the long run most important, the law empowers the Secretary of the Interior to issue improved health and safety regulations for the coal mines whenever necessary. Under the old law, the regulations had been set by Congress and only Congress could change them. Now, through the "rulemaking process," the Secretary proposes new regulations and then issues them, after taking into consideration any comments received on the proposals. For the first time, it is possible to ensure that coal mine health and safety rules are as up-to-date as mining technology.

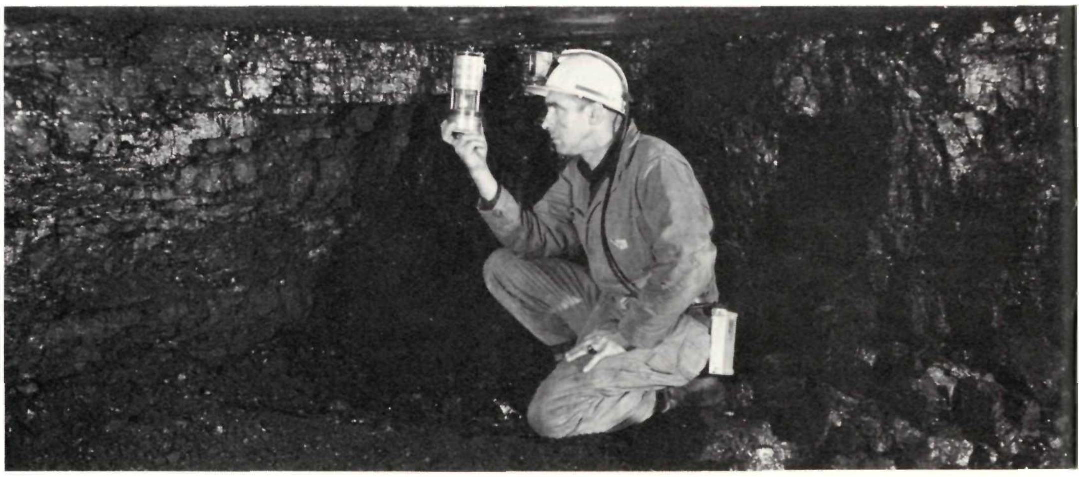
To meet the minimum inspection requirements of the 1969 law, the Bureau's mine inspection workforce had to be quadrupled from approximately 250 to over 1,000. (These figures include supervisors, specialists and trainees, as well as inspectors themselves.) At the end of 1970 the total coal mine inspection field workforce was 564; by the end of 1971 it was over 1,000.

The increase in the workforce was reflected in the increased number of mine inspections. Most provisions of the 1969 law went into effect at the end of March, 1970, and from that point to the end of the year the Bureau made over 9,000 mine inspections. Many of these were "spot checks" of especially hazardous mines, but over 1600 were full inspections, some requiring several weeks to complete. By the end of 1971, the Bureau had made over 26,000 inspections, and over 4,000 were full inspections. The new law requires four full inspections of every underground coal mine annually. By the end of the year, full inspections were being made at a rate that should ensure meeting the four-full inspection requirement in 1972.

During the nine months of 1970 for which the Coal Mine Health and Safety Act was in effect, Bureau coal mine inspectors issued almost 38,000 notices for violations of standards, and nearly 1,500 orders withdrawing men from mines or sections of mines. In 1971 these figures jumped to more than 60,000 violation notices, and over 4,000 withdrawal orders. The Bureau has assessed mine operators many millions of dollars in fines for mine health and safety violations, but since the act also provides for appeal and hearing procedures for operators who demand them, many of the assessments are still to be determined.

To provide professional training for mine inspectors who previously were taught only on the job, the Bureau of Mines has opened a Federal Mine Health and Safety Academy at Beckley, West Virginia. Trainees will study not only the latest mine safety

U.S. Bureau of Mines inspectors are shown at work in mines and taking part in the Bureau's intensive training program.



techniques, mine rescue, mine fire-fighting and mining economics, but also courses in English and mathematics as needed. Permanent headquarters for the Academy, which will ultimately have a student body of about 600, are expected to be ready by the spring of 1974.

The Bureau of Mines also has instituted training programs, safety campaigns, surveys and investigations to attack the problems of roof falls and transportation accidents, the major killers in the mines. These efforts are designed to focus the attention on mine safety not only by the Federal government, but also by the individual states, labor and the mining industry. In addition, a "Winter Alert" program has been put into effect by the Bureau to guard against explosions.

Although the Coal Mine Health and Safety Act has not been in operation long enough to judge its impact fully, one significant achievement already stands out. Concentrations of respirable coal mine dust—the cause of black lung—have been reduced much faster than many persons believed possible when the law was passed.

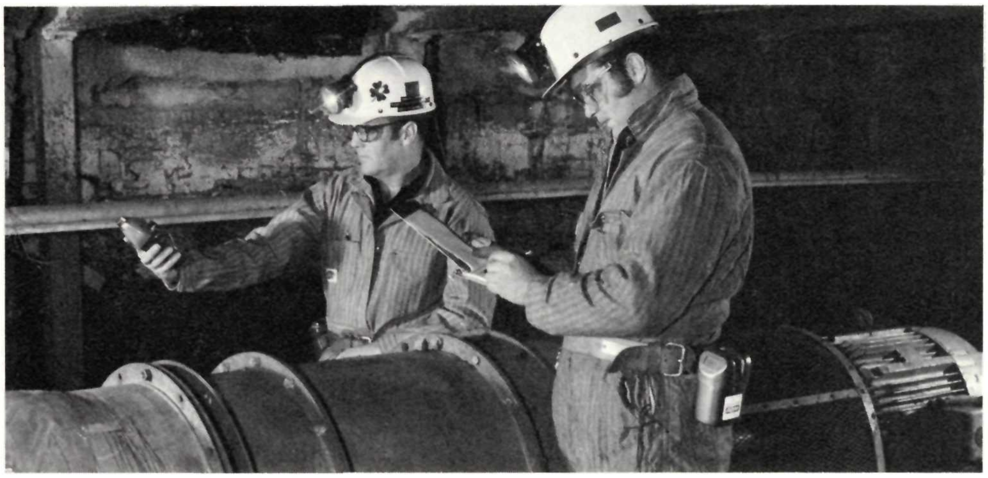
As of June 30, 1970, mine operators were required to limit average concentrations of respirable dust to three milligrams per cubic meter of air, unless a temporary permit for a higher level had been granted. After December 30, 1972, the limit drops to two milligrams per cubic meter.

Today, at any given time, approximately 90 percent of the working sections of underground mines are in compliance with the three-milligram standard; about 70 percent are already reporting dust concentrations under two milligrams per cubic meter. When a working section of a mine drops out of compliance, a notice of violation (and the fine that follows) serves as an incentive to the mine operator to control dust concentrations more carefully.

The remarkable success achieved in reducing dust levels will bring a corresponding reduction in the incidence of black lung among miners who now have no indication of the disease. However, it is not yet known how low the dust levels must be to prevent the disease entirely. Future medical research in the Department of Health, Education and Welfare may show a need to lower the permissible coal mine dust limits still further. The Act gives the Secretary of HEW authority to conduct this research and the Secretary of the Interior authority to enforce even lower dust limits established by HEW.

A wide-range of research programs are under way by the Bureau to determine how mining technology can be made less hazardous. These programs are being carried out under the increased funding provided by the Act and aim at every aspect of the mine health and safety problem, from applied engineering studies to basic research.

Although coal mining is still the Nation's most dangerous major occupation and 180 men died in the mines in 1971, there are indications that the new health and safety law is taking hold. The rate of mine fatalities



—.71 per million man hours of work time—was the lowest in 1971 of any year since statistics were first kept. The reduction is a hopeful sign; an encouragement to those who believe that the new law, properly administered, is capable of ending the long, sorry record of death, suffering and disease that has characterized the Nation's coal mines.

Alaska Native Land Claims Settlement

When the United States purchased Alaska from Russia in 1867, the international transaction included recognition of certain rights of the aboriginal occupants of the territory. Eskimos, Aleutian Islanders and American Indians of Athabascan roots lived at that time, as most of them still do, in coastline villages or as nomads on the frozen inland tundras. Their food was from the sea, from the caribou and other land creatures that inhabit the areas, and from whatever wild vegetation took root and life in this Arctic and sub-Arctic region.

The Natives of Alaska have maintained a claim to the land based upon their use of it—uses which often require them to travel hundreds of miles in pursuit of food. An understanding with the Native peoples as to the extent of their land rights remained unsettled for 105 years, until the passage in 1971 of the Alaska Native Claims Settlement Act.

If American history took a major turn with the Alaska Purchase in 1867, it surely took another major turn with this law, which President Nixon signed in 1971—the basic and generous terms of which were proposed and urged by the President—in response to the appeal of the Alaskan Natives. It represents the conclusion to a long uphill struggle in the halls of Congress for final agreement on the subject of who will be entitled to what lands in the 49th State.

After Alaska entered the Union in 1959, the question of aboriginal claims became interwoven with the issue of the State's claims to certain lands for its own public use and disposition. The growing development of Alaska, and its increasingly apparent potential for minerals, have made the Natives' claims issue and the recent setlement a landmark in our national history.

The new 1971 law extinguishes Native claims and in return provides the Natives with a land settlement of 40 million acres and a monetary settlement of nearly a billion dollars. The specific terms under which these settlements are to be made are necessarily intricate. Essentially the Act's provisions are as follows:

- An Alaska Native Fund is to be established in the U.S. Treasury, into which will be deposited a Federal payment of $462,500,000 to be paid over a period of 11 years; and further deposits of two percent overriding royalties from all proceeds from Alaskan leases (under the Mineral Leasing Act of 1920) until a total of $500,000,000 in royalties has been paid. These monies will come from both Federal and State leasing.

- Regional corporations, comprising Alaskan Natives, will receive periodic payments from the fund, the distributions to be determined by the number of Natives enrolled in each region.

- Enrollment of Alaska Natives is to be conducted in a manner that will assure equitable treatment and opportunity for all Native claimants, and rolls of eligibles must be completed within two years. In brief, Native eligibles would be those born on or before the date of enactment of the legislation and who were alive on

Photo by Emory Kristof—© National Geographic Society

Secretary Morton outlines set-asides for State, Native, and Federal land selections in Alaska at March 15, 1972, press conference.

Native village in the Arctic at the base of Alaska's Brooks Range.

the date of enactment. Heirs to such eligibles would share in benefits upon decease of the eligibles. Instructions on how to apply for eligibility certification began in January 1972.

- The provision for establishment of regional corporations of Natives specifies that the Secretary of the Interior shall, within one year of enactment of the law, divide Alaska into 12 geographic regions. Natives not residing in any one of those regions may opt to vote for the establishment of a 13th region. It further specifies that the Corporations shall conduct business for profit; and that 70 percent of revenues received by each Regional Corporation from timber and minerals is to be divided among all 12 Regional Corporations annually on a population basis.

The land settlement will be implemented in stages. The Act contains a list of over 200 Native villages eligible for benefits. Public lands surrounding each Native village have been withdrawn from all forms of appropriation under public land laws and from selection under the Alaska Statehood Act. In general, the effect of the formula is that 25 townships have been withdrawn around each Native village. Lands in the National Park System and lands withdrawn or reserved for national defense purposes were exempted from the withdrawal for Native selection. From within the withdrawn areas, each Native village may select and receive the surface estate to a certain amount of land which varies with village population. The Regional Corporations will be allocated additional surface acreage, some of which is to be re-allocated to villages. The total selected will be 40 million acres.

- The Act also establishes a Joint Federal-State Land Use Planning Commission for Alaska. This Commission (which will operate only in an advisory capacity) will make recommendations concerning all land selections and undertake a process of land-use planning. This process will include identification of and recommendations concerning areas planned and best suited for reservation in Federal ownership as parks, game refuges, and other public uses. The Commission will also advise and assist in the development of land-use plans by Regional Corporations, Village Corporations, and the State.

- Furthermore, the Act authorizes the Secretary to withdraw up to 80,000,000 acres of unreserved public lands in the State which he deems suitable for addition to or creation as units of the National Park, National Forest, Wildlife Refuge, and Wild and Scenic Rivers Systems. The Secretary shall make periodic recommendations to the Congress as to the appropriate utilization of these withdrawn lands.

Thus, in effect, the Alaska Native Claims Settlement Act of 1971 provides for an equitable distribution of land shares and minerals revenues for the Native population of the State, and will provide guidelines for the additional selection and use of public lands.

Revision of Mining and Mineral Leasing Laws

Conceived and passed in the frontier spirit of a Nation whose lands seemed limitless, the Mining Act of 1872 remained on the books in early 1972—a century later, despite increasingly vocal criticism.

Under the basic mining law, a prospector could look for minerals on most public domain lands not specifically set aside for other purposes, and stake out his claim. He would then file his claim in the county courthouse—with no requirement to notify the Federal Government agency charged with managing that land. And he could then develop that claim for whatever "valuable mineral" he had discovered—or said he had discovered. Not a penny of royalty was paid to the Government.

So large is the public domain and so complex its problems that effective policing of this system against abuse became impossible many years ago. Unless the miner sought a patent (title) to the land,he might never have to say just what valuable mineral he had found. Proof or disproof of such discovery involved a long, costly process.

The law was used by some to grab off a convenient vacation homesite, or even a development of such sites to be sold perhaps by mail order to people thousands of miles away. Others used the Act to strip the land of its timber.

There was no convenient way to determine what land was actively being worked and what claim had long ago been abandoned. A map of claims filed in one part of the Rocky Mountain West was described by one authority recently as looking like "a pile of jackstraws"—dozens or even hundreds of claims overlapping so that ownership seemed hopelessly confused. Abandoned mine shafts and unsightly tailings scarred many regions, making good land management even more difficult.

Yet the Act has its partisans. It had helped build the West. It offered rewards for the small, individual prospector. In addition to opening up the great gold, silver, lead and zinc, copper and other hard-rock mineral discoveries, it had provided incentive to find and extract the uranium needed by the Nation during the post-World War II period.

The most notable and successful change in the 1872 law was the Mineral Leasing Act of 1920, which made oil and gas, oil shale, coal, sodium and certain other minerals obtainable only by leasing from the Federal Government. But the half century since then showed that this was no cure-all. Many of the basic problems persisted. Other uses of the land—notably recreation—came into direct conflict with the archaic Mining Law, which still applied to hard-rock minerals.

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As the decade of the 1970's began, most authorities agreed reform was needed, although there were various ideas as to how far-reaching it should be. The Public Land Law Review Commission recommended a modification of the existing system. Some influential Senators and Representatives, representing both political parties, proposed a complete switchover to a leasing system for all minerals.

President Nixon has recommended bills to modify both the Mining Act and the Mineral Leasing Act. The Administration's proposal puts much more emphasis on environmental protection than is contained in either existing law; it requires an approved development plan before any actual mineral extraction takes place, and a system of management controls by the agency administering the land.

Under the proposed reform of the Mining Laws, the basic freedom of a prospector to "locate" and patent his claim would continue for hard-rock minerals, but all existing and future mining claims would have to be recorded with Interior's Bureau of Land Management within one year, or be presumed abandoned. The claimant would be able to patent only his claim to the mineral deposit—not to the land, which would revert back to the government eventually.

All new mineral claims would be subject to rental and royalty payments. Prospectors would be required to obtain a license at modest cost, and a permit to explore, develop and produce minerals at a somewhat higher fee, so that land managers could retain some ability to guard against land abuse.

And the Secretary of the Interior could require competitive bidding for permits on lands where he had reason to believe there are valuable mineral deposits.

The proposed reform of the Mineral Leasing Act would broaden the list of minerals covered to include construction materials and certain other items. The present Act would also be amended to do away with automatic preference-right leasing, now required under certain conditions; instead, the leases would be issued by competitive bidding. The Secretary would also be allowed to reserve the lands for another and higher use.

Mined Land Reclamation Proposals

We continually seek increasing uses for our land—for residential development, for agriculture, for forestation, for recreation, and for the enjoyment of its own sheer beauty—

yet over the years we have been extracting minerals without regard to the scars left upon the lands.

Approximately 13 million acres have been affected by underground and surface mining and by related mineral waste accumulations. By the year 2000 the total may exceed 30 million acres. The backlog of potential and actual damage includes 292 burning coal waste piles, 1.7 million acres of subsided land, 5.1 million undermined acres including some in urban areas, 63,000 acres of lakes and ponds, and 18,000 miles of streams polluted by siltation and acid mine drainage. About 24 billion tons of mineral wastes are in need of treatment and stabilization to prevent pollution and hazards to health and safety. The mineral industry, which has contributed so much to America's high standard of living, is also the biggest single contributor to pollution in general and to land pollution in particular.

Surface mining activity is currently reported in all 50 states. As the use of land increases and as the need for minerals expands, public awareness and concern for the damage done to the land multiplies. Already, in response to public demand, some 28 states have enacted some form of legislation relating to surface mining activity—20 of them since 1966. Just three have laws relating to control of subsidence from underground mining, although there is underground mining in 39 states. In some places the hostility to the environmental effects of mining operations has generated sentiment favoring a total ban on surface mining, or such severe limitations that the practical effect would amount to a ban.

Consider the effect that such a ban might have, however. Surface mining in 1970 accounted for 94 percent of all domestic production of crude metallic and nonmetallic ores: 2.5 billion tons, compared to 167 million tons from underground mines. Among several of the major nonferrous metals the contribution exceeded 95 percent. Some mineral substances, such as sand and gravel, were produced entirely by surface mining methods.

Approximately 44 percent of all coal in 1970 came from surface mines. Only a sharp increase in surface mining has enabled the coal output to be increased sufficiently to meet the demand. The underground mine output of this important fuel actually fell by some nine million tons in 1970.

The Administration has recognized that the issue of surface mining cannot be stated in either-or terms: either ban surface mining or have a totally ruined environment; either keep surface mining or face crippling shortages of materials and energy.

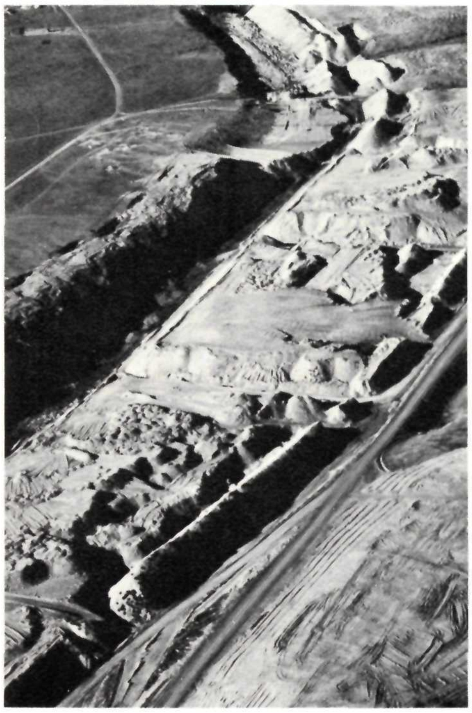
Obviously there must be a way to continue to have large, dependable supplies of minerals and fuels at reasonable costs, and preserve the quality of the environment and the use of the land for other purposes. To balance the extremes, some Federal regulation of mining activity is needed. The goal would be threefold:

—To ensure that all 50 states regulate mining according to equitable national principles in order to eliminate regulatory inconsistencies which result in inequities between operators.

—To prevent deterioration of the environment from all types of mining operations as defined in acceptable legislation.

—To make environmental protection an accepted part and cost of mining activity.

With the states having the initiative to develop their own regulations consistent with their own unique conditions, the possibility of a single set of regulations enforced by Federal authority would be avoided. Yet an overriding principle would maintain that if individual states failed to act within a specified time, the Federal government through the Secretary of the Interior could issue and administer mining regulations for those states.



Surface mining activity is currently reported in all 50 states.

The cost to the Federal government would be recovered from mining permit charges to be levied against mining operators within those states.

A prime reason for a Federal law is to put all states on the same footing as far as environmental protection is concerned, so that the more responsible states and operating companies are not penalized for their willingness to bear the added costs of environmental protection. The second, of course, is to see that those states and companies which are presently less concerned about protecting their natural resources, quickly become so.

Reclaiming the millions of acres already despoiled by past mining operations would be costly. In the future, however, the cost of reclaiming the land to acceptable standards would be included as a normal cost of production. No operator would be able to undercut the price of coal or gravel or other mineral by not observing his responsibility for reclaiming or restoring the land.

The proposed federal legislation would assure that mining is not undertaken where adequate reclamation is either technically infeasible or where the economic benefits are outweighed by potential damage to the environment. The responsibility for administering these provisions would fall to the Secretary of the Interior.

President Nixon has stated: "Restoring nature to its natural state is a cause beyond party and beyond factions. It has become a common cause of all people of this country. It is of particular concern to young Americans—because they, more than we, will reap the grim consequences of our failure to act on programs which are needed now if we are to prevent disaster later."

Perhaps never before has there been a greater consciousness of the need for conservation, for health and safety, and general concern for the environment. We have largely eliminated the violent, silt-laden floods of most of our large rivers, and we have created reservoirs that provide recreation for millions of people and billions of hours of pollution-free hydroelectric power. We have set aside vast areas to be kept forever in their natural state, and we are steadily expanding these areas. We have protective game laws, and positive programs to rescue endangered species. Our forest, crop and pasture lands are far better managed today than they were a generation ago. Oil is no longer pumped out of the ground to flow down the creeks, nor is gas flared indiscriminately in the field, yet these practices were routine until well into the 1940's.

We have a different set of problems that relate to the business of supplying the fuels and minerals that we need at acceptable costs to the environment. The Department of the Interior is working in the belief that if we address these problems, not in a frenzy of guilt and hysteria and self-accusation, but with a constructive attitude of pride in what we have already accomplished and a determination to do whatever is needed to reclaim the land and protect the environment, then we can correct the evils that remain on the land.

Proposal for a Department of Natural Resources

Developing a government responsive to the times is a top priority of President Nixon. When the President in 1971 requested the Congress to adopt a reorganization plan of the Executive Branch, he said:

"The problem with government is not, by and large, the people in government. It is a popular thing, to be sure, for the public to blame elected officials and for elected officials to blame appointed officials when government fails to perform.

"There are times when such criticism is clearly justified. But after a quarter century of observing government from a variety of vantage points, I have concluded that the people who work in government are more often the victims than the villains when the government breaks down. Their spirit has usually been willing. It is the structure that has been weak.

"*Good people cannot do good things* with bad mechanisms."

The scope and complexity of the Federal Government has mushroomed. In the last 20 years, our population has increased by one-third, the Federal budget has quintupled, Federal civilian employment has risen nearly 30 percent, and Federal domestic programs have grown tenfold.

What is required, the President advised Congress, is a "truly comprehensive restructuring of executive organizations" to bring the government abreast of its growth and expansion in the past few decades.

Thus, the President proposed sweeping changes to bring the government up to date and establish an organization designed to rid it of inefficient, wasteful methods that squander time and money.

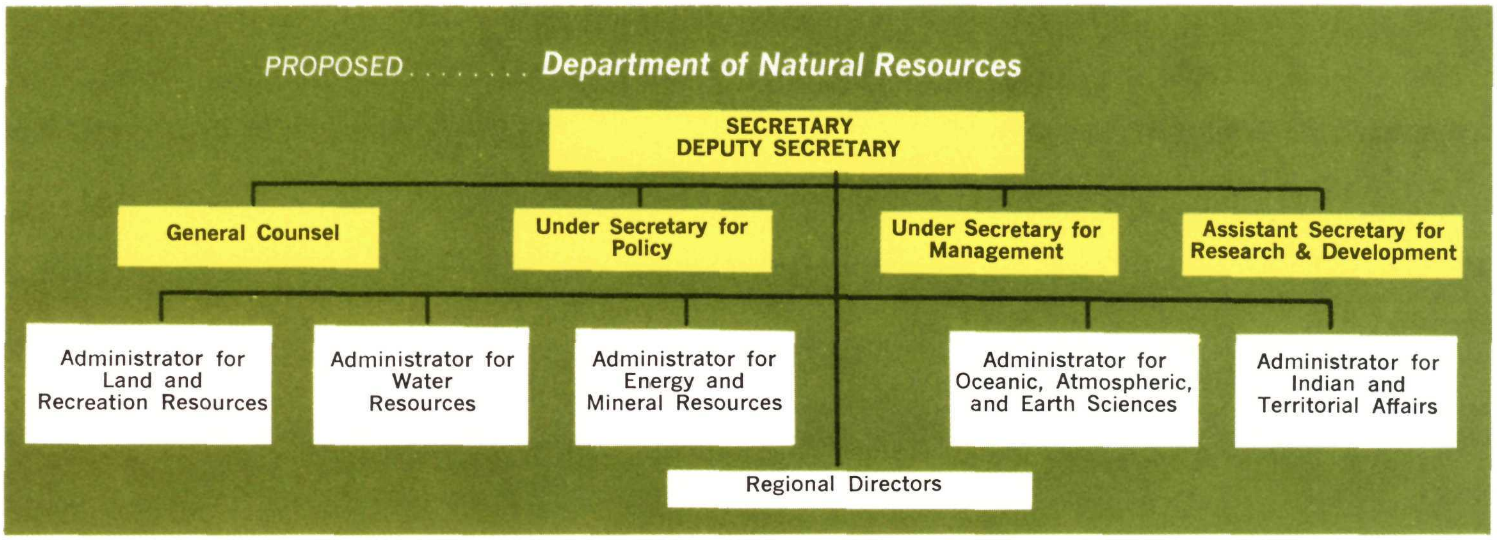
The President recommended that the Departments of the Treasury, State, Defense, and Justice be kept as they now exist. The Department of Agriculture also would be retained except that some of its functions would be transferred to other Departments.

The remaining six Departments and all or portions of other agencies would be reorganized according to major functions into the Department of Natural Resources, Department of Human Resources, Department of Economic Affairs, and Department of Community Development.

The Department of the Interior is concerned mostly with the proposed Department of Natural Resources, which would be structured principally around Interior agencies.

While the President's proposal—as well as many similar proposals introduced by Members of Congress—is not a new idea, the President's recommendations brought to the fore the refinement of a concept that pleads for acceptance.

The idea of a unified resources department dates back to at least


PROPOSED........ Department of Natural Resources
SECRETARY
DEPUTY SECRETARY
General Counsel
Under Secretary for Policy
Under Secretary for Management
Assistant Secretary for Research & Development
Administrator for Land and Recreation Resources
Administrator for Water Resources
Administrator for Energy and Mineral Resources
Administrator for Oceanic, Atmospheric, and Earth Sciences
Administrator for Indian and Territorial Affairs
Regional Directors

1937, when the Brownlow Commission called for putting our basic resource agencies in a single department. Every Presidential reorganization Task Force since that time has recommended establishment of a single department to deal with natural resources.

Conservationists, in support of the President, have emphasized the need for balanced development of natural resources, along with preservation of the environment, which are more readily attainable if one department is given overall responsibility for energy, land use, water, recreation, and related resource matters.

At present, major water resources development programs are located in three different departments; non-military lands are administered by four agencies in two departments; Federal recreation areas are administered by six different agencies in three departments; marine resources and environmental programs are located in several agencies; and some 40 agencies have an interest in energy programs.

The new DNR would bring together in one department most of the natural resources responsibilities now scattered throughout the Federal Government. DNR would be designed to manage and utilize the Nation's resources in a manner that would protect and enhance our environment. It would have five principal administrations.

Its Land and Recreation Resources Administration would provide a central focus for managing Federal lands and for developing national land use measures to assure that planning is done before—not after—lands are developed.

The Water Resources Administration would provide the first opportunity to proceed with unified, comprehensive planning, under one Administrator, in all major water resources areas.

The new Energy and Mineral Resources Administration would be a great boon for energy consumers across the country as well as for all who deal in any form of marketable energy.

The new Oceanic, Atmospheric and Earth Sciences Administration would help achieve a better understanding of the earth, waters, atmosphere, and the physical processes that govern our planet. Man long has been interested in acquiring more knowledge about his physical environment. By doing so, he not only learns more about the forces that affect him, but also may learn to alter unfavorable conditions to make his earthly life safer and happier.

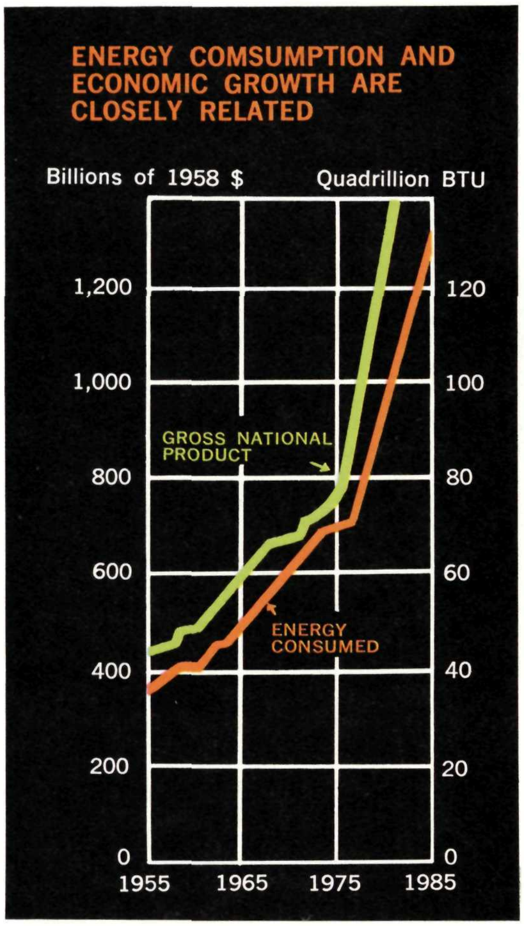
Indian and Territorial Affairs programs would operate under a single Administrator to assure that they receive the high level leadership and attention they merit.

Thomas Jefferson was not an advocate of frequent changes in laws and constitutions, but he wrote that "laws and institutions must go hand in hand with the progress of the human mind."

In commenting more than 170 years later on Jefferson's thesis, President Nixon said:

"Institutions must advance. Jefferson and his associates saw that point clearly in the late 18th century, and the fruit of their vision was a new Nation. It is now for us—if our vision matches theirs—to renew the Government they created and thus give new life to our common dreams."

We have witnessed a great environmental awakening in our country and in the world. This awakening, as President Nixon has said, is working a revolution in values, as commitment to responsible partnership with nature replaces cavalier assumptions that we can play God with our surroundings and survive. We are gaining an increasingly sophisticated understanding of the way economic, institutional and legal forces shape our surroundings for good or ill; the next step is learning how to turn such forces to environmental benefit.


ENERGY COMSUMPTION AND ECONOMIC GROWTH ARE CLOSELY RELATED
Billions of 1958 $
Quadrillion BTU
1,200
1,000
800
600
400
200
0
120
100
80
60
40
20
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GROSS NATIONAL PRODUCT
ENERGY CONSUMED
1955
1965
1975
1985

Energy for Living

> "
>
> ***We must apply an Energy Ethic in the consuming of energy in our homes and daily life. The efficient use of energy is as important as finding new sources. President Nixon noted in his Clean Energy message that, "We must get back on the road of increasing efficiency—both at the point of production and at the point of consumption, where the consumer himself can do a great deal to achieve considerable savings in his energy bill."***
>
> "

From: Remarks by Secretary of the Interior Rogers C. B. Morton
at a Press Conference, Washington, D. C. April 12, 1972

To progress in today's world, a nation needs energy, plenty of readily available energy.

A direct relationship exists between a nation's economic advancement, as measured in terms of its gross national product, and the amount of energy it consumes. As one goes up, so does the other. The United States, which has a national product exceeding a trillion dollars annually, highest in the world, also far outstrips every other nation in its energy consumption. Our increasing use of energy helps to raise our standard of living, enhances our culture and promotes our scientific advancement, and creates opportunities for leisure-time enjoyment. As our population grows, our consumption of energy multiplies. If energy growth continues at its present rate the United States will require almost twice as much energy by 1985 as it used in 1970, and three times as much by the year 2000.

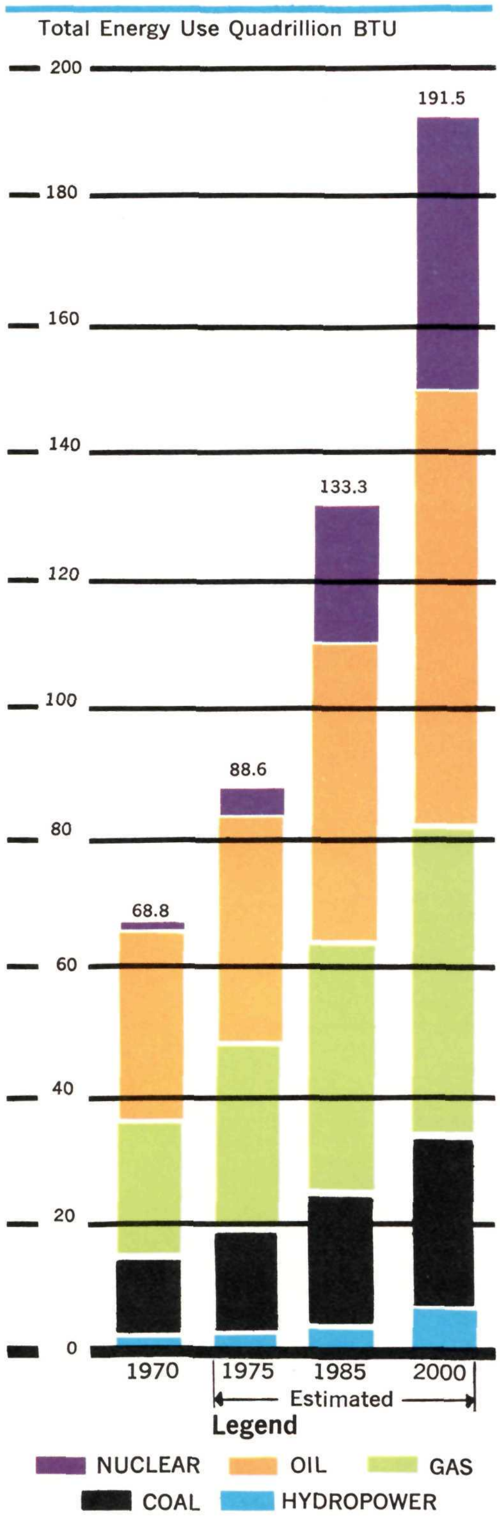
In announcing a broad program for expanding present energy sources and developing new ones, President Nixon told Congress on June 4, 1971: "A sufficient supply of clean energy is essential if we are to sustain healthy economic growth and improve the quality of our national life." The President emphasized the harnessing and delivery of energy must be coupled with concern for the environment. He called for "a balanced and imaginative research and development program" to meet the goals of environmental protection and adequate energy in the decades ahead, and assigned the Department of the Interior a major role in carrying out that program.

The President recognized the need for an improved federal government posture when he proposed an Energy and Mineral Resources Administration in a new Department of Natural Resources. The establishment of the Department of Natural Resources would place responsibility for energy questions in a single agency, which could execute and modify policies in a comprehensive and unified manner so as to help assure an adequate flow of energy and protection of the quality of life.

The present relationship among sources of energy gives a perspective to the problem. Currently, oil supplies about 43 percent of our total energy consumption; natural gas, 33 percent; coal, 20 percent; hydropower, 3.8 percent; and nuclear, not quite 0.3 percent.

In future years, however, these relationships are destined to change as demands for clean-burning fuels increase and resources of certain fuels diminish. Domestic resources of oil and gas are insufficient to meet the projected consumption for the remainder of the century. Severe gas shortages from conventional domestic sources could occur during the seventies. In contrast, our coal reserves are adequate to meet anticipated requirements for hundreds of years at the current rate of consumption provided the coal can be converted to clean-burning fuel to meet environmental standards.

More and more, the concept of multi-purpose projects is being recognized and adopted as the nation makes greater use of its limited resources. A dam, built primarily to control floods and regulate water supplies for agricultural or urban use, may also provide a source of hydro-electric power and create an area for recreation and even education. The development of geothermal steam may in some areas provide not only a new and supplementary source of energy but also may supply water, desalted for human consumption and agricultural purposes. The leasing and development of oil shale lands in the States of Colorado, Utah and Wyoming may yield other essential minerals besides the oil shale itself. The creation of jobs and other economic benefits are inherent in such major projects as the proposed Trans-Alaska Pipeline and the development of coal-fired, thermal-electric powerplants of the Four Corners region of the Southwest.


Trends of U. S. Energy Use

National security is a major underlying factor in our domestic quest for energy, be it in the search for oil under the oceans on the Outer Continental Shelf, or in the commitment to complete facilities to increase the supply of nuclear energy for consumption. Keeping abreast of the domestic demand for energy helps to guarantee that the United States will not suffer from sudden fluctuations in foreign supplies, or at worst, from being cut off from foreign sources.

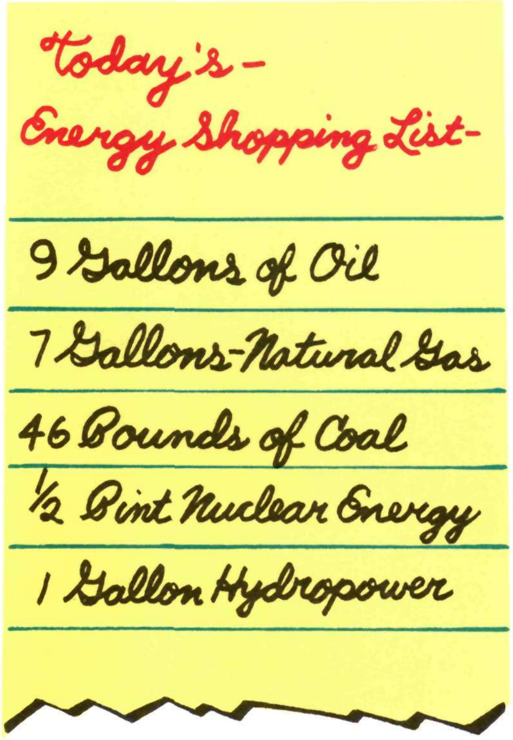
The energy challenge, while complex, requires anticipation of the demands of the future as accurately as possible; appropriate action to assure that energy sources will be developed without major impact on the environment, and means made available to transport or transmit the energy safely to the consumer. We also must conserve valuable energy sources by making the most efficient use of existing supplies.

In response to President Nixon's call for a clean energy development, the Department of the Interior has undertaken a program to avert an energy crisis in the years and decades ahead. The responsibility carries with it a need to fulfill all requirements of the National Environmental Policy Act of 1969, which sets forth as national policy the encouragement of "productive and enjoyable harmony between man and his environment."

Major missions under the Department of the Interior's jurisdiction in the quest for energy encompass areas of great geographic, geologic and climatic diversity. Their locations range from the frozen tundra of the Arctic to the depths of the Gulf of Mexico; from the underground steam of California's Imperial Valley to the coal fields of Appalachia. How the Department is fulfilling these missions to meet the Nation's present energy needs and to provide for those of the future is explained in the pages that follow.

> "***. . . Keeping abreast of the domestic demand for energy helps to guarantee that the United States will not suffer from sudden fluctuations in foreign supplies, or at worst, from being cut off from foreign sources.***"

Here's the Typical Daily Energy Shopping List for an Average American Family in 1972.

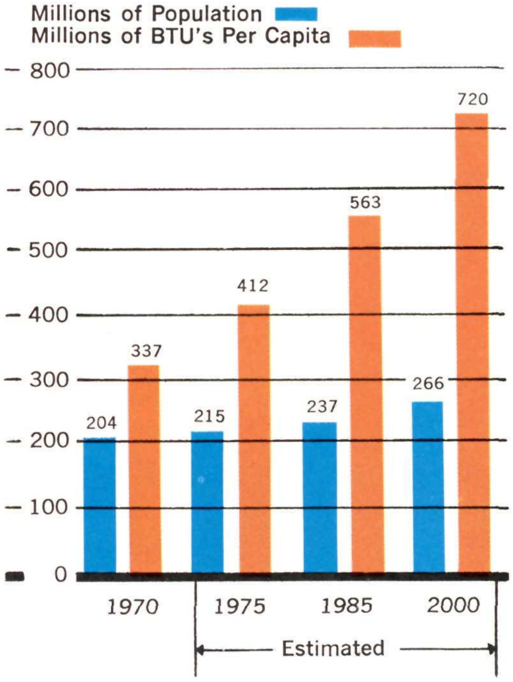


Today's -
Energy Shopping List -

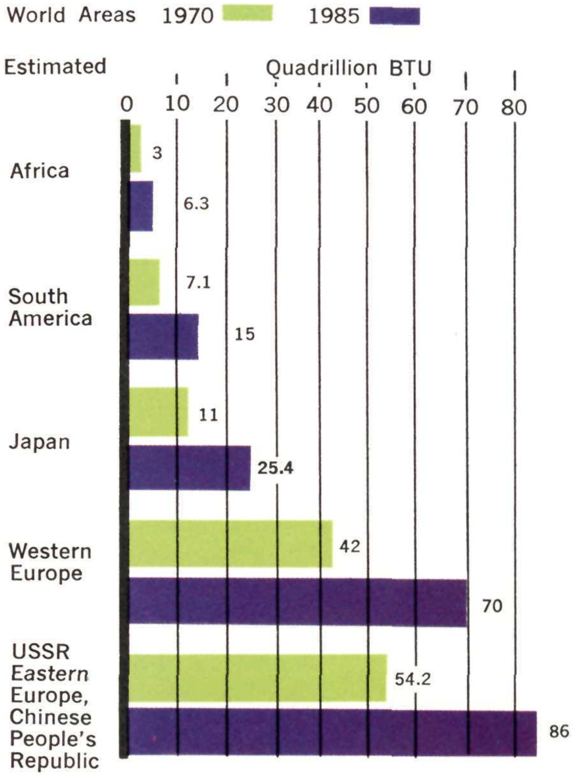
9 Gallons of Oil
7 Gallons-Natural Gas
46 Pounds of Coal
½ Pint Nuclear Energy
1 Gallon Hydropower

As the United States Grows . . . More Consumers Will Demand More Energy Per Capita . . .

Trends in U.S. Per Capita Energy Use



. . . and the Rest of the World's Energy demands are growing too!



The Domestic Oil Deficit

Not since 1967 has the Nation had the capacity to meet its oil requirements solely from domestic sources. Despite the huge size of oil and gas resources the lead times involved in bringing these sources to market are extensive and in the near term can only provide for a part of the growth in demand, rather than actually reversing the present trend toward greater dependence on foreign oil.

Banning further offshore drilling would remove from exploration large areas that offer the greatest potential for future discoveries that would be required to meet our fuel needs.

Trans-Alaska Pipeline

The proposal for a trans-Alaska oil pipeline had its inception in 1968, when the oil industry reported a major discovery on State lands near Prudhoe Bay, more than 250 miles north of the Arctic Circle. The Department of the Interior began analyzing the proposal officially in 1969 after a group of oil companies, joint owners of what is now Alyeska Pipeline Service Company, filed an application for a right-of-way permit to cross the Federal lands which occupy most of the proposed 789-mile route.

In determining whether to grant or deny the permit, the Secretary of the Interior was confronted with a number of major questions involving the Alaskan environment and the Nation's growing needs for energy. How could the oil be transported across hundreds of miles of fragile Alaskan terrain and across the open sea to markets in the Lower 48 States safely, economically and with minimum harm to the environment? How could the possibility of damage to Alaska—to its landscape, its water systems, its wildlife, its native economy—be held to an absolute minimum? How could a pipeline be constructed to withstand the ever-present threat of major earthquakes?

To help him reach a decision, the Secretary assembled teams of specialists in every phase of Arctic activity. Experts in various agencies of Federal and State governments, in science, in industry, in conservation, in other disciplines, as well as the public at large, offered their knowhow and their opinions on the pipeline proposal. Because the eventual decisions had to balance all of the environmental and economic considerations against the Nation's requirements for additional oil, the Department of the Interior organized a special Inter-Agency Task Force, a Technical Advisory Board, and a scientific group which became known as the Menlo Park Working Group.

Operating within the guidelines of the National Environmental Policy Act of 1969, the task force accumulated the knowledge of outstanding private and government experts who had done Arctic research or construction, for the preparation of stipulations and an environmental impact statement. Within Interior, the U. S. Geological Survey, the Bureau of Sport Fisheries and Wildlife, the Bureau of Land Management, and the Bureau of Indian Affairs offered their special expertise in assisting in the consideration of the pipeline permit application.

Geological Survey prepared engineering-geologic strip maps of the proposed corridor, orthophoto maps showing the topography and cultural features in the oilfield development around Prudhoe Bay, and extended flood magnitude and frequency studies to new streams. The survey assisted materially in the preparation of technical stipulations on planning, design, construction and operation, identified problems of construction of a hot-oil pipeline in permafrost (in

Photo by Emory Kristof © 1971 National Geographic Society

Vast oil resources of Alaska's North Slope would be added to United States energy pool upon completion of Trans-Alaska Pipeline. Strictest environmental safeguards are required in construction and operation of 789-mile hot oil line.

classic professional reports) and collected temperature, earthquake and weather data.

The Bureau of Sport Fisheries and Wildlife studied the pipeline's potential effects on the migratory habits of the caribou, the possible impact on other species of animals and birds, the effects of potential oil spillage into streams and other waterways, how the fish spawning habits and life cycles might be changed by alterations in the terrain, and performed other studies.

The Bureau of Land Management, which administers the public lands through which about 600 of the 789 miles of the route will pass, compiled technical data and organized public hearings in Washington and in Anchorage to assure that anyone interested in any phase of the pipeline could be heard and that all feasible recommendations would be taken into consideration in the preparation of the final impact statement.

Comments from agencies, also required under the National Environmental Policy Act, were made public in an effort to gain all possible public participation before the final environmental impact statement was written and the Secretary weighed his awesome decision.

The Bureau of Indian Affairs contracted for a study which analyzed the impact of the proposed pipeline on the native population. The study took into account not only the economic effects which the pipeline might have, but also possible changes in the cultural and social lives of natives living along the planned pipeline route.

In its efforts to be punctilious about conforming to the Environmental Policy Act, the U. S. Geological Survey enlisted 175 specialists in several task forces to contribute to the preparation of the final environmental impact statement. Some 29 volumes of data from Alyeska Pipeline Service Company were submitted to the Technical Advisory Board, to assure that every detail of the project would be available for use in preparing the statement.

Possible alternatives to the project also were studied in detail. These include not only oil transportation but also alternative sources of energy for the United States. The Interior Department would have authority to halt construction at any time that it determines that its requirements are not being followed or in the event that it finds that the environment is in danger. Interior also would have authority to halt pipeline operations after the line goes into use, if environmental dangers become evident.

Culminating many months of study, the Department issued a final environmental impact statement on March 20, 1972. The statement, by far the most comprehensive environmental study ever issued by any Federal agency, occupied nine volumes including supporting documents, and weighed more than 18 pounds.

In considering the pipeline decision, Interior Department measured possible impacts upon Alaska's Native culture. Influx of money from construction jobs and from pipeline operation could improve economy of the State.

Photo by Emory Kristof © 1971 National Geographic Society

The proposed pipeline would begin at Prudhoe Bay, on the edge of the Beaufort Sea, where the main oil reservoir is located. The reservoir is in a sandstone formation about 500 feet thick, at a depth of one-and-a-half to two miles and containing many billion barrels of usable oil. Recoverable reserves on the North Slope have been estimated in a range of from 10 to 30 billion barrels or more—an amount which, though tremendous, is overshadowed by forecasts that man will have to produce and deliver more than 200 billion barrels of oil products in the next ten years to supply America's energy needs.

The pipeline would be 48 inches in diameter. Initially it would carry 600,000 barrels of crude oil a day, rising to two million barrels in less than seven years. From Prudhoe Bay it would run southward across the barren North Slope, paralleling the Sagavanirktok and Atigun Rivers to the Dietrich Pass in the Brooks Range, where it would reach its highest elevation, 4,800 feet. Then the route would follow the Dietrich River into the Alaskan interior, where temperatures have been known to range from 90 degrees above zero in summer to 80 below in winter. It would cross the Yukon River on a bridge of the proposed State highway. South of the Yukon the route would pass east to Fairbanks and Eielson Air Force Base, then along the Delta River to cross the Alaska Range at Isabel Pass. Then it would parallel the Copper River to Thompson Pass, where it would cross the Chugach Mountains and descend to the south side of Port Valdez, on Prince William Sound which empties into the Gulf of Alaska.

The marine terminal at the Port of Valdez would cover 900 acres. It would be constructed on bedrock, an important provision because great earthquakes have been experienced in southern Alaska. At the terminal the oil would be loaded into tankers from four storage tanks holding a 10-day supply, at the rate of up to 100,000 barrels an hour. Fixed and floating docks would accommodate one to three tankers a day, taking oil south to Puget Sound, San Francisco and Los Angeles, where it would be absorbed into the West Coast region of the Nation's vital energy supply.

A feature of the marine terminal at Valdez would be a ballast treatment plant. On a tanker's arrival at the terminal oily ballast water would be pumped into treatment tanks where oil would be separated from water. Oil would go to storage, and water to the harbor.

If man's projects are to co-exist with the Arctic environment, they must indeed be designed with the utmost skill, constructed painstakingly, and watched constantly to avert all unnecessary damage or waste. The Interior Department has accepted seriously its responsibility to see that the environment is protected.

The line would be monitored along its entire route through Alaska at an operations control center at the marine terminal in Valdez. Eight radio systems, including 26 repeater stations, are planned for operations control. About 150 valves along the line, strategically placed for environmental protection, would be valuable for controlling oil spills; 95 would be radio-controlled. A main-line block valve would be operated on a signal from the control center to the pump station nearest the valve, which would then operate by radio from the station. The Department also would require that special equipment and trained personnel be held in readiness for prompt cleanup should a spill occur.

> “. . . *The Interior Dept. has accepted seriously its responsibility to see that the environment is protected* . . .”

During operation, the pipeline and its surrounding terrain—rivers, glaciers or slopes—would be monitored for technical and environmental changes so that adverse effects could be noted and immediate action taken.

Constant surveillance for oil leaks would be supplemented by special devices now being developed for the detection of very small leaks and for small bending of the pipe caused by uneven ground support. Such small bends, if uncontrolled, could lead to wrinkling, a sure sign that continued movement could ultimately cause a small leak.

In the past (the earthquake of March 1964 is still fresh in Alaska's memory) temblors have reached large magnitudes in earthquake zones along the route. An important provision in the Department of the Interior's stipulations is that an earthquake movement of a certain strength, depending on location, would automatically close down the pipeline. Inspection would then be made before start-up.

About half of the length of the pipeline would be buried in a trench about six feet wide and eight feet deep. The above-ground portions would be supported on steel pile bents or on gravel pads at 70-foot intervals, and arranged in a zigzag pattern to relieve compressive forces caused by changes in pipe temperatures. It would require about 83 million cubic yards of gravel, and would use 8,500 acres of land permanently and another 11,500 acres temporarily—only a tiny fraction of the 375 million acres of land in Alaska.

The project would take three years for initial construction and would offer job opportunities—direct and indirect—for perhaps 25,000 persons at peak times. Current estimates of cost run at about $4 billion, none of which would be Federal money.

Oil would enter the pipeline at a temperature of 135 degrees, and because of friction would remain hot along its four-and-a-half-day journey from the North Slope to Valdez. The oil would be pushed along by pumps in 12 pump stations, and would be monitored along its entire route.

Because of the oil's temperature, the pipeline could not be buried in the permafrost which occupies a sizeable portion of the route. Permafrost is merely ground (bedrock, gravel, sand, silt, clay or muck) that has remained frozen for thousands of years. At the oil fields the permafrost is 2,000 feet thick but it thins out further south and eventually disappears. In the short Arctic summer the ground surface thaws to a depth of a few inches to a few feet (the so-called active layer), but any material disturbance of the surface mat of vegetation deepens the active layer. Ice melts and drains through the pores between mineral grains, and occasionally from the segregated layers and other shapes beneath the surface.

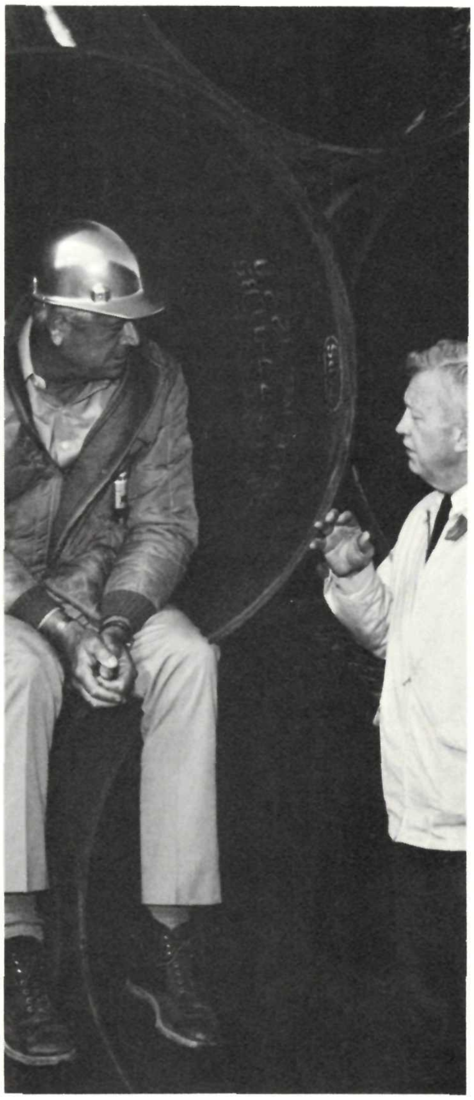
In well-drained gravels and bedrock, thaw of permafrost does no harm, but in some kinds of ground there is excess ice, or too much water with poor drainage, and the ground subsides and softens. The pipe would be buried only in thawed ground, bedrock, or well-drained sand and gravel. Everywhere else the pipe would be supported from two to eight feet above the ground and be insulated.

The planned corridor would cross some 120 streams of considerable size. The largest, of course, would be the Yukon River, at a point where it is half a mile wide. Some of the streams are known to be subject to periodic floods when lakes, dammed by glacier ice, breach the ice dams and spill their entire contents in a few days. The corridor also would extend across at least three valleys whose upper reaches contain glaciers that have left evidence of fairly recent surges—extra-rapid advances—that have carried glacier ice across the corridor's path. Generally the pipe would pass underneath the stream in thawed ground, with the use of conventional procedures. Many of the streams to be crossed are important fish habitats and there is concern over the possibility that construction activity might disturb spawning grounds.

Possible changes in migration patterns of the caribou herds as a result of an elevated pipeline have been pointed out and studied, as have the potential effects of man on other wild Arctic species such as foxes, wolves, grizzlies, moose, Dall sheep and peregrine falcons—which make their homes along the proposed route.

In addition to the natural physical consequences, there are the problems of man's relationship to the environment. Man surpasses most other organisms in his unit production of wastes—those from his own biological processes and those from the artificial environments with which he surrounds himself—paper, clothing, scrap metal, wood, oil and its products. He is the major polluter of air and water and the greatest noise maker. Construction and maintenance of the transportation corridor could introduce chemical and biological materials whose environmental effects would be only partly predictable.

Furthermore, there are considerations of possible effects which the proposed pipeline might have on the native Alaskan economy. The creation of well-paying jobs during construction, the changes both favorable and unfavorable, in life styles and cultures among the natives as oil money has its impact, are among the problems which would be taken into



Secretary Morton discusses problems of pipeline construction in permafrost during meeting on North Slope with E. L. Patton, president of Alyeska Pipeline Service Company.

consideration at the outset. Against this must be weighed the important increase in income for all Alaskans from sale of leases and fees paid to the State by the pipeline company. The pipeline is initially planned to operate for at least 30 years, but it would probably continue beyond that as more oil discoveries are made, thus giving time for the development of a more varied Alaskan economy.

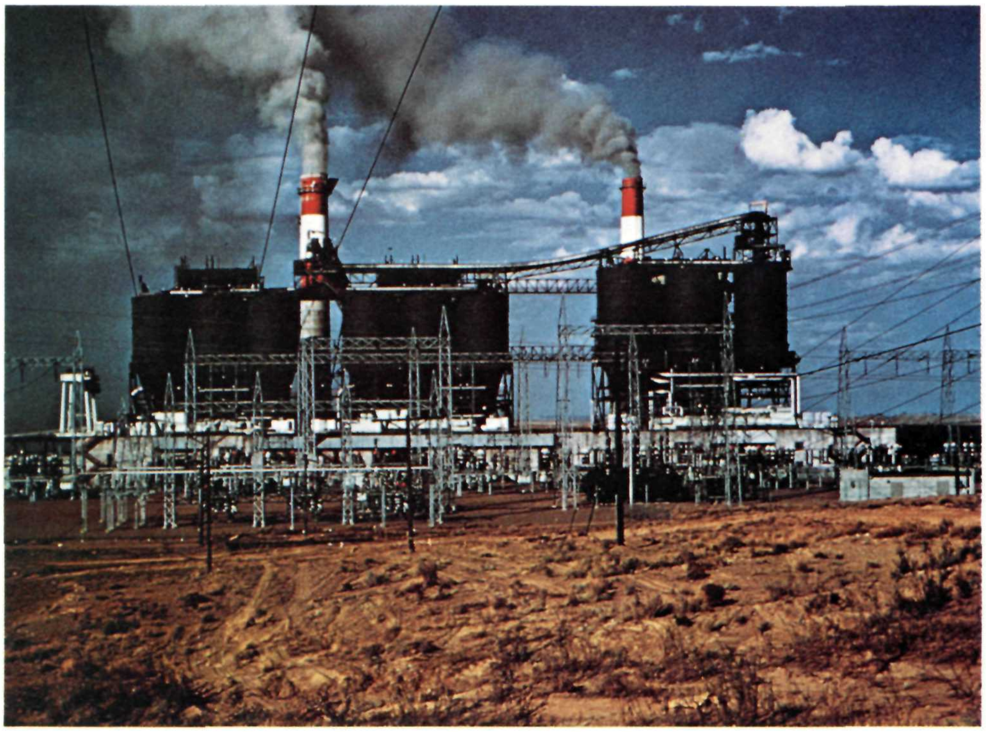
Secretary Morton is confident that the problems of bringing oil from the North Slope and protecting the environment can be solved.

"The vast Arctic petroleum reserves of the North Slope must be viewed as having the highest of priorities in the orderly development of natural resources in America," he said. "We are committed to the orderly development of this and other resources to maintain our economy, but we are also committed to insuring the preservation of the fragile Alaskan environment. The oil resources of Prudhoe Bay, as well as those of the Outer Continental Shelf and elsewhere, are vital to the nourishment of the standards of living which we enjoy in this country. But the enduring environmental and social values must—and will—be protected."

Four Corners

Attempts to meet two great national objectives—the expansion of energy supplies and the protection of an unspoiled environment—again find themselves in seeming conflict in a sparsely populated but resource-rich region of the American Southwest known as the Four Corners.

The region's name comes from the meeting place of Arizona, Colorado, New Mexico and Utah on a high point of the Colorado Plateau. This is the only place in the United States where four states meet. Four Corners today also connotes a broad expanse of breath-taking, travel-folder country which extends beyond the common borders of those four states. Four Corners means hundreds of square miles of Indian country, public domain land, watershed area and national parkland stretching as far west as southern Nevada.



Four Corners generating plant near Farmington, New Mexico, is one of two coal-fired plants already operating in sparsely populated area of Southwest. Interior Department has launched a multi-faceted study to determine environmental impacts of this and five other plants in area.

The region's common denominators are its picturesque scenery, its clean air, its blue sky, and its rich mineral deposits, particularly coal. The region is so rich in coal, in fact, that the U.S. Geological Survey estimates that 107 billion tons lie in thick, reasonably accessible beds that could support as many as 165 large power plants and coal synthesis plants. Each plant, if it existed, would have a life expectancy of 35 years.

Because of the magnitude of the coal resources, and because of the increasing need for clean electric energy in the growing metropolitan areas of the Southwest and southern California, industry has come to the Four Corners to establish coal-fired, thermal-electric powerplants.

Two such powerplants are in operation already: the Four Corners plant, with more than 2,100 megawatts of generating capacity near Farmington, New Mexico, and the 1,580-megawatt capacity Mojave plant in the southern tip of Nevada near Bullhead City.

Three plants are in various stages of construction: the Navajo plant near Lake Powell on the Navajo Reservation in Arizona; the Huntington Canyon plant in southern Utah, and the San Juan plant in northern New Mexico. These three installations will have about 3,400 megawatts of generating capacity, bringing the total for the five plants to more than 7,000 megawatts, an amount almost sufficient to supply the power requirements of the population of greater New York City.

Oil and gas from Outer Continental Shelf will continue to supply much of America's needed energy. Interior Department is responding to growing demands for power by increasing offerings of off-shore tracts. Tight environmental restrictions apply to all leases.

A sixth plant, which would be larger than any of these, is still on the drawing board. This is the Kaiparowitz plant, proposed for southern Utah. Construction of Kaiparowitz was held up by Secretary of the Interior Morton to determine whether environmental damage by this and the five other plants might outweigh the benefits of more electricity. It is estimated sufficient resources are present to develop more than 8,200 megawatts at Kaiparowitz.

The Secretary's action, taken in May 1971, resulted from a growing national concern about the impact of the plants not only on the environment but on the cultures of the Indian people.

Four Corners is the land of the Navajo and Hopi Indian tribes. One of the major sources of coal, the so-called Black Mesa of northern Arizona, is regarded by many Indians as a sacred area, a natural shrine which should be left undisturbed. Other Indians look to the Black Mesa as a source of livelihood, with royalties and job opportunities promising them a return to the self-sufficiency common to the Indian people in this area thousands of years ago.

Secretary Morton launched a comprehensive examination of the possible environmental effects of existing and proposed generating plants in the Southwest region, together with a study of the full range of alternatives available to meet the power requirements with a minimal impact on the environment.

A top-level Federal Interagency Task Force under the chairmanship of Interior Under Secretary Dr. William T. Pecora was established, together with a study organization assigned to produce an in-depth report within one year. This "Southwest Energy Study" was divided into 12 work groups, each set up to investigate specific economic, social, cultural and environmental aspects. One of the primary concerns was to examine how the development of power plants might interact on the environment.

The study effort developed into a comprehensive effort to seek out all of the factors contributing to an environmental problem. More than 200 professional people from 21 Federal agencies and seven State governments participated in the study.

Federal participation included personnel from eight Interior bureaus and offices and from 12 other agencies. State governments represented were Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming. In addition, the work groups utilized inputs from industries, universities and private citizens' groups.

"Because the United States Government owns the vast majority of the land in this area we have certain responsibilities of ownership that require us to see to it that all of the interests of the public are protected," Secretary Morton said in announcing the task force. "These interests include protection of the unique desert environment of the Southwest, water and air quality, use of the water of the Colorado River in accordance with State and Federal law, proper development of the natural resources located in the region, protection of the rights and opportunities of the Indians, and allowing for the production of electricity to satisfy the requirements of the Southwest."

Oil and Gas, and the OCS

Locating and developing new sources of clean energy for the United States is urgently important. We cannot expect our presently known domestic reserves of oil and gas to last indefinitely at the rate we are using them. Each year, moreover, our energy consumption goes up about 4 percent while new domestic sources are developed at a rate which increases about 2.6 percent annually.

If these trends continue, and if environmental factors force even tighter restrictions on fuel use—both likely possibilities—the United States by 1985 might find itself importing more than half of the oil and gas it would require. From the standpoint of national economic and military security, this could pose significant problems.

A more feasible approach, along with seeking more efficient use of existing fuel supplies and developing supplementary fuels, is to expand production from known reserves of oil and gas while continuing to assess new areas showing potential.

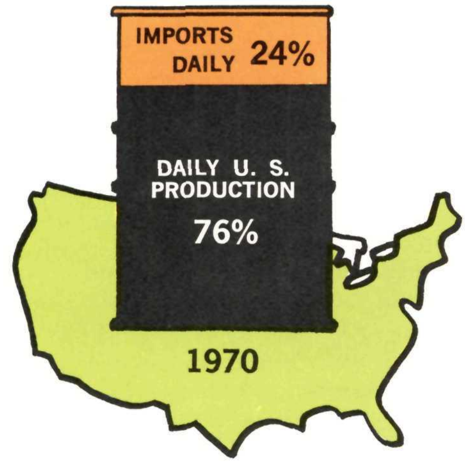
In his Clean Energy Message to Congress on June 4, 1971, President Nixon presented a broad range of actions to assure an adequate supply of clean energy for the Nation. The President directed the Secretary of the Interior to increase the offerings of oil and gas leases on the Outer Continental Shelf (OCS) and to publish a schedule of lease offerings through the year 1975. The President cautioned that offshore oil production has been the source of oil spills in past years and insisted the Interior Department continue to enforce its strengthened requirements for environmental protection.

"Within these clear limits," the President said, "We will accelerate our efforts to utilize this rich source of fuel. In order to expand productive possibilities as rapidly as possible, the accelerated program should include the sale of new leases not only in the highly productive Gulf of Mexico, but also some other promising areas."

It has long been believed that the Continental Shelf—a submerged portion of the continent that extends from the shore to a point where the slope drops sharply to great depth—contains not only large resources of oil and gas, but possibly other valuable minerals. Historically, however, there has been some dispute between the coastal states and the Federal government as to who has the right to control mineral production from these submerged lands.

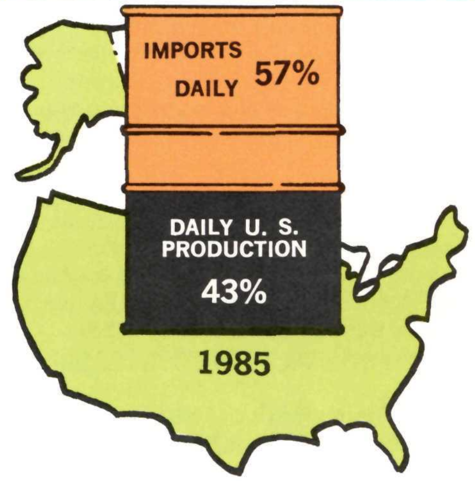
In 1953 the Congress ceded state rights to all lands within a limit of three nautical miles. As a result of a Supreme Court decision in 1960, an exception was made for Texas and

Our Growing Dependency on Oil Imports for Energy



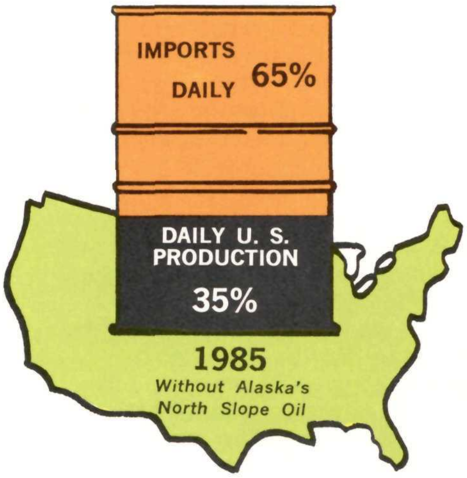
Thousands of Barrels Daily	
U. S. Production	11,280
North American Imports	700
South American Imports	2,200
Eastern Hemisphere Imports	530
Total Supply	14,710

. . . and by 1985 the picture will look like this if we can add Alaska's North Slope oil to our production . . .



Thousands of Barrels Daily	
U. S. Production	9,165
Alaska North Slope	2,000
North American Imports	2,200
South American Imports	3,500
Eastern Hemisphere Imports	9,585
Total Supply	26,450

. . . without Alaska's North Slope oil, the import picture is this . . .



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North American Imports	2,200
South American Imports	3,500
Eastern Hemisphere Imports	11,585
Total Supply	26,450

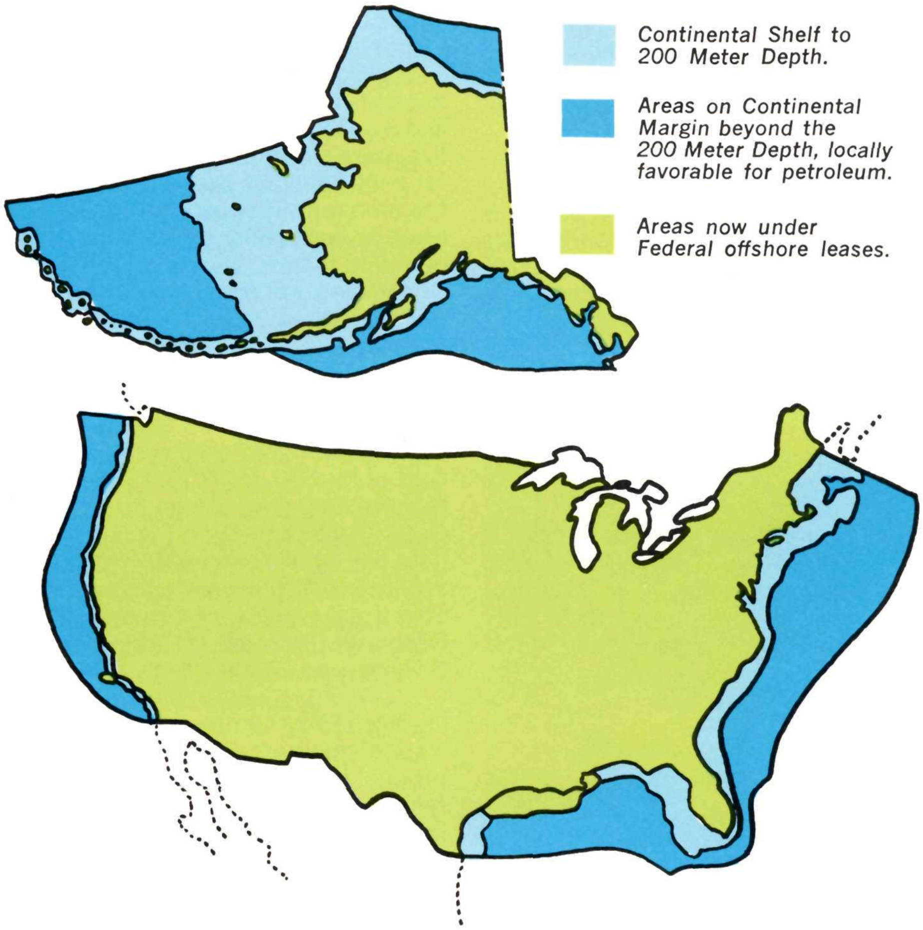
for the Gulf Coast of Florida, where a limit of three leagues (about 10 miles) was recognized. Congress reserved control of the natural resources of those portions of the shelf and slope beyond the state limits for the Federal government. Although action is still pending in the Supreme Court over claims of several states to areas of the OCS up to 200 miles seaward of the shoreline, the Interior Department through its Geological Survey is studying the geologic framework and assessing the potential resources in the event that someday this area is approved for oil and gas drilling.

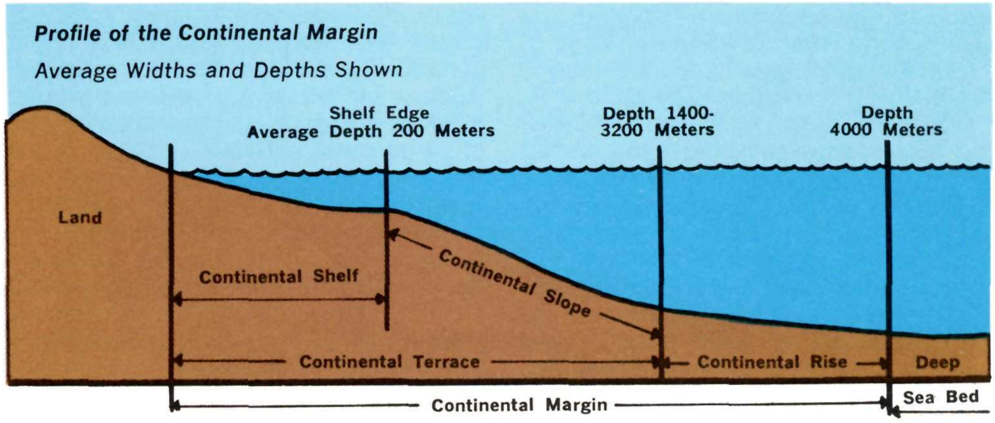
The area of continental seabeds adjacent to the United States out to 2,500 meters in depth is approximately 1,332,000 square miles. Between the State lands and the 2,500-meter depth lie approximately 1,284,000 square miles, roughly considered the total province of the geologic continental shelf and continental slope. However, 60 percent (805,000 square miles) lies between the limit of State authority and the 200-meter depth. Most mineral fuels research over the next 20 years will be within this latter zone.

Substantial parts of the OCS have been reconnoitered in a broad sense by the Geological Survey's geophysical traverses in the last decade. We can now say we know "something" about this vast area. These initial investigations have resulted in the discovery of previously unsuspected basins containing thick sedimentary deposits. Basins of this type are typically associated with oil and gas accumulations.

The Geological Survey's long-term program of energy related work includes systematic investigations, geologic mapping, and resource appraisals of continental shelf areas, with initial emphasis on those having high potential for future discovery of oil and gas deposits by industry. The

The Resource Potential of the United States Continental Margin


Continental Shelf to 200 Meter Depth.
Areas on Continental Margin beyond the 200 Meter Depth, locally favorable for petroleum.
Areas now under Federal offshore leases.



appraisals provide information needed by the Department of the Interior for leasing and regulation of petroleum development. Systematic investigations and geologic mapping also contribute information required to evaluate environmental aspects and impacts.

The Department of the Interior's Bureau of Land Management is responsible for mineral leasing on the OCS. With the exception of a few tracts that have been leased to produce sulfur, salt and phosphate, leasing on the OCS has been confined to oil and gas.

Leases on the OCS are awarded on a competitive basis. Prior to holding a lease sale, the Interior Department calls for nominations so that it can determine which tracts the oil and gas industry would like to see offered for lease. Nominations are analyzed along with geologic and geophysical data to determine which tracts command the greatest industry interest and are most likely to be explored and developed.

After the analysis, the Department publishes a list of tracts it proposes to offer. It also prepares and releases a draft environmental impact statement concerning the effect which the development and extraction of petroleum from the lease will have on other resources and the environment. Before a final impact statement is prepared, the Department may hold hearings to gather additional information about the need for a sale and its effects on the environment.

The Department may choose to eliminate specific tracts from the ultimate sale if it considers that these tracts might be subject to environmental dangers. It even may choose not to hold the sale at all. If, after review of the final statement it is decided to hold the sale, an announcement of the sale is published and the industry is invited to submit bids.

Lease sales are conducted by the Bureau of Land Management and sealed bids are received at an announced hour and opened in public. Each sealed bid contains a bidder's bonus offer for lease rights on a given tract, a check amounting to one-fifth of the total amount offered and a second check amounting to the first year's rental for the tract. Bids for each tract are ranked according to the amount of bonus offered. The lease is awarded to the highest qualified bidder. However, the Department reserves the right to reject bids that do not represent a realistic offering. Checks accompanying unsuccessful bids are returned to the bidders.

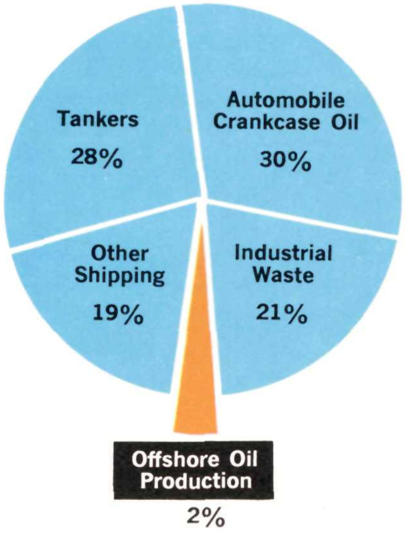
At present, 4,282,680 acres in the Gulf of Mexico and 355,239 acres in the Pacific Ocean are under lease. Outer Continental Shelf leasing to date has been confined to the Gulf of Mexico off the coast of Louisiana, Texas and Florida, and to the Pacific Ocean off the coast of California, Oregon, and Washington.

During 1971, 18 percent of the Nation's domestic crude oil production came from the OCS, and resource experts predict that the increased demands of the future will require an even higher percentage of production from it. Total cumulative Federal revenue from bonuses, rentals and royalties since OCS drilling began following passage of the OCS Lands Act of 1953, was approximately $7 billion as of December 31, 1971. This includes $4.5 billion in bonus payments. OCS royalty revenues were $346 million in 1971, an increase of 22 percent over 1970.

In addition to the usual conservation problems involved with onshore production of oil and gas, the offshore has special environmental problems.

Oil spills off California and in the Gulf of Mexico have focused public attention on these problems. Responding to this public concern the Geological Survey has revised and strengthened its regulations and orders. Stringent provisions protect the public interest with thorough environmental safeguards prior to leasing and total responsibility for control of spills and pollutants that may result from lease operations. The Survey has increased its geologic, geophysical, engineering, and inspectional capability to prevent spills and has required industry to prepare detailed procedures to minimize the effect of a spill should one occur.

Sources of Ocean Oil Pollution



Detailed studies of all phases of OCS operations by NASA, the National Academy of Enginering and others will enable the Survey to adopt the latest advances in technology and lease management methods to provide even better safety and pollution control. The control of production rates on the OCS, formerly regulated by the adjoining States and generally conforming to a system of market demand, has been assumed by the Survey. Production rates now are based upon the maximum efficient rate of recovery.

Another factor which could affect future offshore drilling and production was a court decision early in 1972 resulting from a suit brought by three environmental groups to block a lease sale in the Gulf of Mexico. The judge in the case enjoined the sale, holding that the Interior Department had not fully complied with those requirements of the National Environmental Policy Act concerning possible alternative courses of action. When the judge refused to dissolve the injunction in time to permit completion of the sale, the Department cancelled the sale.

The schedule of future lease sales, issued by Interior in response to the President's directive of June 4, 1971, is being revised. It is apparent that the strictest environmental safeguards must apply at every stage of the leasing, drilling and producing operations on the OCS. The Interior Department will meet its responsibilities to enforce these criteria and to meet national demands for new energy-producing resources, balancing each in the light of court decisions.

As President Nixon said at the conclusion of his Energy Message: "I am confident that the various elements of our society will be able to work together to meet our clean energy needs. And I am confident that we can therefore continue to know the blessings of both a high energy civilization and a beautiful and healthy environment."

Oil Shale Potential

Oil shale—one of our greatest potential sources of energy—may be emerging from its long dormant state to help fill a widening energy gap in the United States.

Some 11 million acres of land are known to contain deposits of oil shale which are commercially recoverable, although no shale oil is being produced now in the United States. However, with domestic crude oil becoming scarce and its price increasing, the potential of commercial development is becoming more attractive.

President Nixon gave impetus to an oil shale program in his Clean Energy Message to Congress. The President requested the Secretary of the Interior to expedite a leasing program that would lead to oil shale development on public lands, provided that environmental questions can be satisfactorily resolved. Some 8.3 million acres of public lands managed by the Federal government contain oil shale.

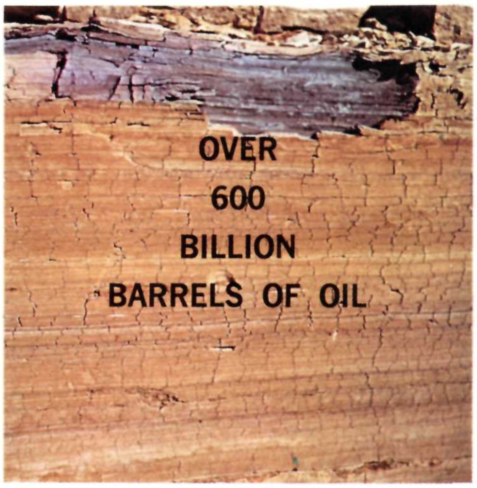
On June 29, 1971, Secretary of the Interior Morton announced a proposed prototype leasing program to develop the oil shale resources in Federal lands in Colorado, Utah and Wyoming, where the potential is the greatest. The Interior Department also released a preliminary draft environmental impact statement at the time as required by the National Environmental Policy Act of 1969. Although environmental control technology in an oil shale industry is yet to be fully developed, work by the Department, several universities and companies indicates that environmental problems can be solved.

The prototype program would involve public and industry participation in selecting up to six oil shale tracts—two in each of the three States—to be offered for lease by sealed, competitive bonus bids late in 1972. Some 23 tracts were nominated by 15 companies in January 1972, for consideration in the leasing program.

Individual tracts nominated by industry would be subjected to careful environmental and technical analyses to determine their suitability for leasing. A supplement to complete the draft environmental impact statement would then be issued and public hearings conducted prior to any decision on actual leasing. The first leases, subject to detailed environmental safeguards designed for each individual tract, could be issued in December 1972, if the tentative timetable is followed.

The largest deposits of high-grade oil shale are in the Piceance Basin of northwestern Colorado. In the southern part of this basin, a rich layer known as the Mahogany Zone, ranging from 50 to 100 feet in thickness, is exposed in cliffs north of the Colorado River. In the north central part of the basin, about 1,000 feet of rich oil shale lies buried beneath 500 to 1,600 feet of sandstone and lean or barren shale.

Mountains of Energy—Oil Shale



Smaller deposits of this high-grade oil shale exist in the Uinta Basin of Utah and the Green River Basin of Wyoming. It is estimated that the high-grade deposits in the three States contain about 600 billion barrels of oil. In addition, lower-grade shales in the three-state region may contain 1.4 trillion barrels of oil, but only a small fraction of the latter would be of commercial interest. Rich oil shales contain from 25 to more than 100 gallons of oil per ton.

The processing of oil shale involves mining, crushing, retorting and upgrading. After rock is crushed it is put into a retort and heated to around 900 derees Fahrenheit, which converts kerogen, a bituminous material occurring in the shale, into oil vapors and gases and the remainder of the rock into spent shale.

Before crude shale oil is sent to a refinery, it is upgraded by a process that converts nitrogen to ammonia and removes sulfur as hydrogen sulfide, thus providing two useful byproducts.

Piceance Basin of northwestern Colorado contains vast deposits of high-grade oil shale.

Oil shale can be burned as a solid fuel or it can be processed to yield oil or combustible gas. The inorganic fractions of some oil shales also contain byproducts such as sodium carbonate and phosphate, aluminum, uranium, vanadium, copper and molybdenum minerals in extractable amounts. After the oil and minerals are removed, part of the spent shale can be used as lightweight aggregate.

There has been periodic interest in oil shale every time it appeared that the country was running short of oil. The threats of shortage that arose during World War I and World War II disappeared when large new discoveries of oil were made. However, consumption of petroleum recently has reached such magnitude and is growing at such a rate, that even discoveries as large as that made on the North Slope of Alaska do not remove the threat of shortage.

The opening up of oil shale lands in the West for a prototype development program by private industry would be a milestone in the long and complicated history of the resource area.

Before 1920 oil shale came under the Mining Law of 1872, which permitted the discoverer to mine the mineral without any payment to the Government and to gain title to the land upon payment of a small fee.

Over 30,000 claims were thus filed, but no mineral patents containing oil shale were issued before February 25, 1920. Under the Mineral Leasing Act of 1920, shale oil became a leasable mineral. Under this system, the government disposes of the mineral on a royalty basis but retains title to the land. No person could hold more than 5,120 acres under lease. On April 15, 1930, President Hoover withdrew the deposits of oil shale, and the lands containing them, from disposition under the Mineral Leasing Act and other public land laws.

Subsequently, the withdrawal was modified, first to permit the issuance of oil and gas leases, and later to permit the issuance of sodium permits and leases. The Multiple Mineral Development Act of 1954 provided that mining claims could be located on lands known to be valuable for Leasing Act minerals subject to a reservation to the United States of all minerals disposable under the Mineral Leasing Act. In 1968, the oil shale lands

(Mineral Leasing Act lands) were formally withdrawn from all mining claim locations.

The Department of the Interior is attempting to resolve the present validity of unpatented, pre-1920 claims and also claims made under the Multiple Mineral Development Act of 1954. Oil shale leasing, as does any other Government action potentially affecting the environment, must meet requirements of the National Environmental Policy Act of 1969.

The proposed program has been formulated with the intent to resolve past difficulties by making a limited number of leases available for private development under carefully controlled conditions. At the most, only the six leases of a maximum 5,120 acres each would be permitted in the three States. Specifically, the objectives of the program are to:

1. Provide a new source of energy to the Nation by stimulating the development of commercial oil shale technology by private industry;
2. Insure the environmental integrity of the affected areas and, concurrently, define, describe, and develop a full range of environmental safeguards and restoration techniques that can reasonably be incorporated into the planning of a mature oil shale industry;
3. Permit an equitable return to all parties in the development of this public resource; and
4. Develop management expertise in the leasing and the supervision of oil shale resource development in order to provide the basis for future administrative procedures.

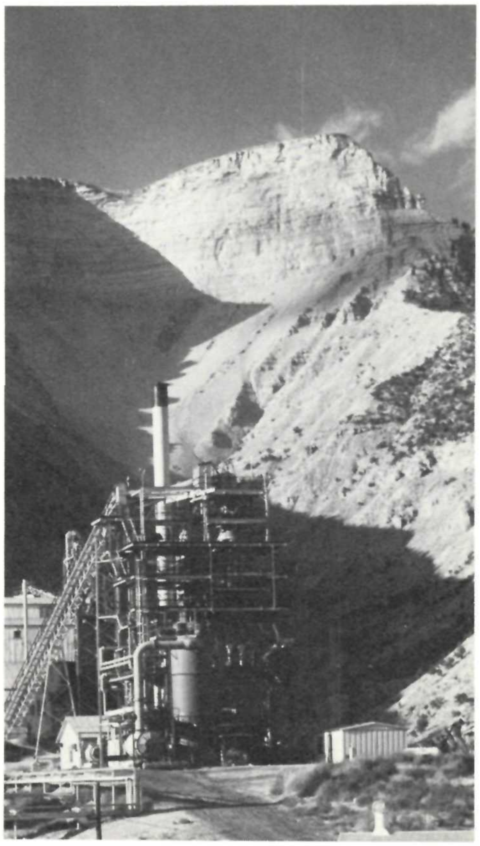
Apart from the leasing program, other Federal actions are needed to facilitate the development of a shale oil industry.

First, titles to Federal lands which have been clouded for years by unpatented mining claims need to be adjudicated as rapidly as possible.

Second, it may be necessary to amend the Minerals Leasing Act to ease or remove leasing limitations. Currently, a person, company or consortium is limited to one lease not in excess of 5,120 acres. This limitation may prove to be incompatible with the land requirements of commercial oil shale development and the scale of operations required to develop an industry based on improving technology.

Third, legislation may also be needed to permit consolidations of public and private holdings into commercial-sized tracts. This action is considered necessary because much of the shale-rich land is fragmented into tracts which are too small for economical development. Consolidations could occur through land exchanges or through unitized operations.

The leasing program has been designed to meet the requirements of the Mining and Minerals Policy Act of 1970 and the recommendations of the Public Land Law Review Commission. If industry views the economic potentials of shale oil production as promising, leases all tracts made available under the program, and progresses diligently in the development of technology, production of shale oil could reach 900,000 barrels a day by the mid-1980's. Though this rate would represent only about three percent of annual petroleum requirements, a basis would be laid for a larger shale oil production in subsequent years when it will be urgently needed to meet our Nation's energy requirements.



Oil shale experimental facility near Rifle, Colorado, has been leased by Interior Department to a Denver firm to demonstrate feasibility of extracting shale oil from surrounding rock. Developing oil shale resources is important part of President Nixon's clean energy program.

Following a 1971 tour of oil shale country, Secretary Morton said: "I am most impressed with environmental considerations that industry and government have reflected. My visit here has strengthened my belief that oil shale can be developed in harmony with the environment."

Geothermal Energy

From earliest times, man undoubtedly wondered if he could put to effective use the spectacular bursts of natural steam that spurted from volcanoes, geysers, and boiling springs. The resource he thought of harnessing has come to be called "geothermal power."

In recent years, interest has greatly expanded in this potential new source

Although geothermal steam resources exist in many areas of the world, their development as energy source is relatively new. Shown, from left, are the Upper Geyser Basin, a tourist attraction in Yellowstone National Park; the Geysers, in Sonoma County, California, first commercial geothermal steam development in United States; and a geothermal operation at Cerro Prieto in Mexico.

of power. Although the magnitude of this resource is largely unknown, it has been estimated that if only one percent of the heat in the top six miles of the earth's crust could be developed, this source would exceed all known fossil fuel reserves. While much of this heat is of relatively low temperature and will probably never be developed, economically significant concentrations of geothermal energy do occur in local "hot spots" where high temperatures from 150° F to 650° F are found in porous rocks that contain liquid water or steam. Those concentrations are known as "geothermal reservoirs."

To have potential for commercial use, a geothermal reservoir must maintain a high temperature (150° to 400°), be shallow enough to allow drilling (currently, 10,000 feet or less), have rock permeability to allow water or steam to flow at a high rate, and adequate water to recharge its system.

Limited development of geothermal resources has occurred since around the turn of the century. In 1905, the first geothermal power station was built at Larderello, Italy. For the next several decades, there were no more major developments in the field, and even now Italy leads the world in power production from natural steam.

New Zealand began major exploration of hot springs and geyser areas in 1950. Today, the United States, Japan, and the Soviet Union are producing power from geothermal sources, and Iceland uses hot water from geyser fields for space heating.

About 1,200 thermal springs occur in the United States, located mostly in the Western States. California, Idaho, and Nevada contain about 200 sites each, and several hundred others occur throughout Oregon, Wyoming, Utah, Colorado, Montana, and New Mexico. All of these geothermal fields are associated with hot springs.

In the United States, the first commercial geothermal power plant was built by the Pacific Gas and Electric Co. in 1960 at "The Geysers," California, utilizing geothermal steam. Some 75 active wells have been drilled there and are producing about 200 megawatts of electricity annually.

The potential for geothermal development has not been fully tested because Federally owned geothermal resources became eligible for leasing only recently. Passage of the Geothermal Steam Act of 1970 (P. L. 91-581) gives the Secretary of the Interior authority to issue leases for the purpose of developing and utilizing geothermal steam and associated geothermal resources on Federal lands. Implementation of the Act will make possible the evaluation and development of geothermal resources located on the 700 million acres of Federal lands eligible for leasing.

The Bureau of Reclamation and Office of Saline Water are collaborating in an investigation of the technical and economic feasibility of the use of heat energy for desalting geothermal water as a supplemental water supply in the Lower Colorado River Basin. The main focus of this program is on development of the geothermal potential of the Imperial Valley in southern California.

The Geothermal Steam Act provided for classification of public lands with respect to their potential value for geothermal development, for development of regulations covering leasing and operations, and for competitive and non-competitive leasing, depending upon the potential for development. To date, some 1.8 million acres have been classified by the Geological Survey as Known Geothermal Resources Areas (KGRAs). Approximately half of the lands in these areas are in Federal ownership.

In addition, some 96 million acres have been designated as prospectively valuable for geothermal development. All the lands classified are in the tectonically active belt of the western States and Alaska. Competitive bidding is required for leasing in KGRAs; elsewhere leasing is under noncompetitive leasing provisions of the Geothermal Steam Act.

The Department's program is proceeding on three fronts: (1) leasing of Federal lands with development by private capital, (2) continuing research on principles and processes controlling the occurrence of geothermal resources together with continuing evaluation and land classification, and (3) evaluation of the potential use of geothermal energy for production of fresh water from brines. Provisions of the National Environmental Policy Act of 1969, calling for preparation of environmental impact statements, are strictly complied with by the Department in carrying out its program.

Increased interest in geothermal steam is evidenced by Federal expenditures for geothermal resource investigations which have risen from less than $20,000 in fiscal 1968 to an indicated total of about $2,000,000 in fiscal 1972. Private expenditures in this field are not known, but will probably greatly exceed Federal expenditures.

The Geological Survey is continuing a research program aimed at obtaining answers to fundamental questions concerning the nature and distribution of geothermal resources in the United States. One phase of the program is the study of the hot water systems of Yellowstone National Park, one of the world's major hydrothermal areas.

Geologic mapping, extensive geo-chemical sampling and analysis of waters, coupled with geophysical studies and diamond drilling, have led to a new interpretation of the origin of the Yellowstone Park area and a better understanding of the mechanism of geyser activity. Several new investigations are being undertaken which include reconnaissance surveys and hot spring sampling in Western States with emphasis on Oregon and Nevada; detailed studies of Long Valley, California—an excellent example of a hot water geothermal system—and studies of the Geysers-Clear Lake area, which contains the world's largest vapor-dominated geothermal system.

Survey research also will involve two efforts at regional assessment. One will focus on an area of high conductive heat flow recently recognized in the Battle Mountain area in Nevada. The other will examine geothermal manifestations in southeastern Oregon to select target areas held promising for more detailed studies.

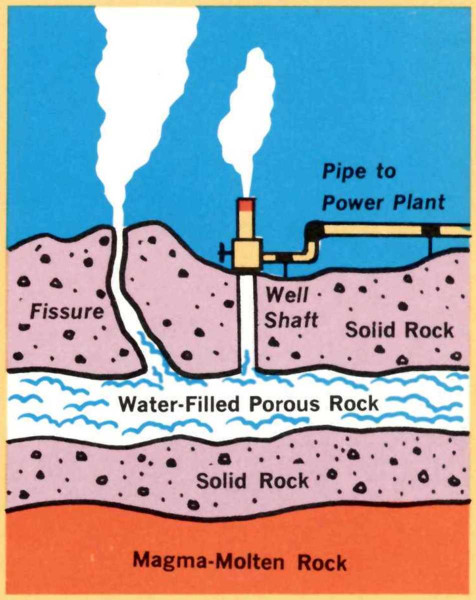
Production of geothermal energy is not entirely free of environmental impacts. However, the Interior Department is taking this into account in planning its leasing, and research and development programs. The most severe impacts are associated with large scale development of the resource and, depending upon local conditions, may include:

1. Noise from drilling and testing of geothermal wells. To the extent practicable such noise will be controlled through the use of noise control on drilling rigs and mufflers for venting steam.

2. Release of noxious gases, mainly hydrogen sulfide, from wells during testing and from power plants. Control measures include restricting test flows to limit gas releases to acceptable levels, and removal of noxious gases prior to release of steam at power plants.

3. Instability, including land subsidence and the problem of increasing seismicity. Both these effects are related to withdrawal and reinjection of geothermal fluids. The present plans for control of these effects envisage use of cool waste waters for reinjection into the reservoir. This will solve the problem of waste water disposal and provide for control of potential land subsidence and seismic problems as well.

State-by-State acreage classified under classification standards of the Geothermal Steam Act of 1970 follows:



Heat for geothermal steam comes from magma, or molten rock, far below surface of earth. Harnessing of geothermal power holds promise as supplementary source of clean energy.

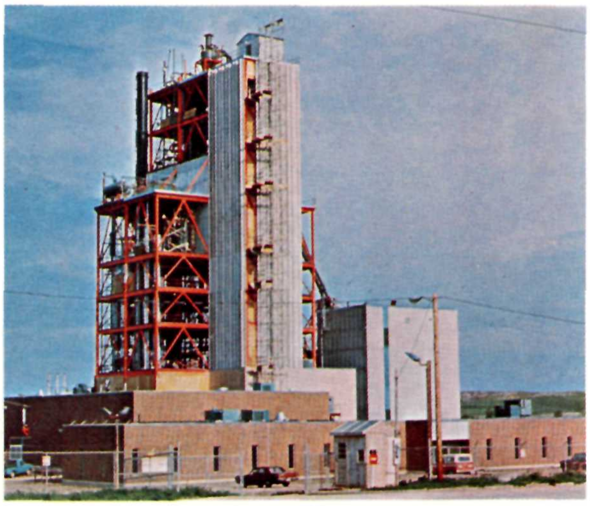
Known Geothermal Resource Areas (KGRA)

State	Acres
Alaska	88,160
California	1,051,533
Idaho	21,844
Montana	12,763
Nevada	344,027
New Mexico	152,863
Oregon	84,279
Utah	13,521
Washington	17,622
Total	1,786,612

Lands Potentially Valuable for Geothermal Development

State	Acres
Alaska	11,277,000
Arizona	1,473,000
Arkansas	11,000
California	15,737,000
Colorado	1,014,000
Idaho	14,845,000
Montana	3,834,000
Nevada	13,468,000
New Mexico	7,482,000
Oregon	15,048,000
South Dakota	436,000
Utah	4,511,000
Washington	5,759,000
Wyoming	824,000
Total	95,719,000

Photo by James Blair, © 1971 National Geographic Society



Conversion of coal, which exists abundantly in nature, to a pipeline quality natural gas is a major part of Interior Department's program to provide new sources of clean energy. At left is a typical coal-burning power plant. Above is a coal gasification pilot plant in operation under an Office of Coal Research contract at Rapid City, South Dakota. Simplified diagram at right shows products which can come from large-scale operation of a commercial, regional gasification facility.

Coal Gasification

Dwindling reserves of clean-burning natural gas, increasing public pressures for clear air and healthful environment, and abundant domestic coal resources, have combined to make the commercial production of a clean coal-gas not only desirable, but necessary as a supplementary source of the Nation's energy.

President Nixon has stressed the important role that coal gasification should play in the future energy picture. In his Clean Energy Message, the President stated: "As we carry on our search for cleaner fuels, we think immediately of the cleanest fossil fuel —natural gas. But our reserves of natural gas are quite limited in comparison with our reserves of coal. Fortunately, however, it is technically feasible to convert coal into a clean gas which can be transported through pipelines.

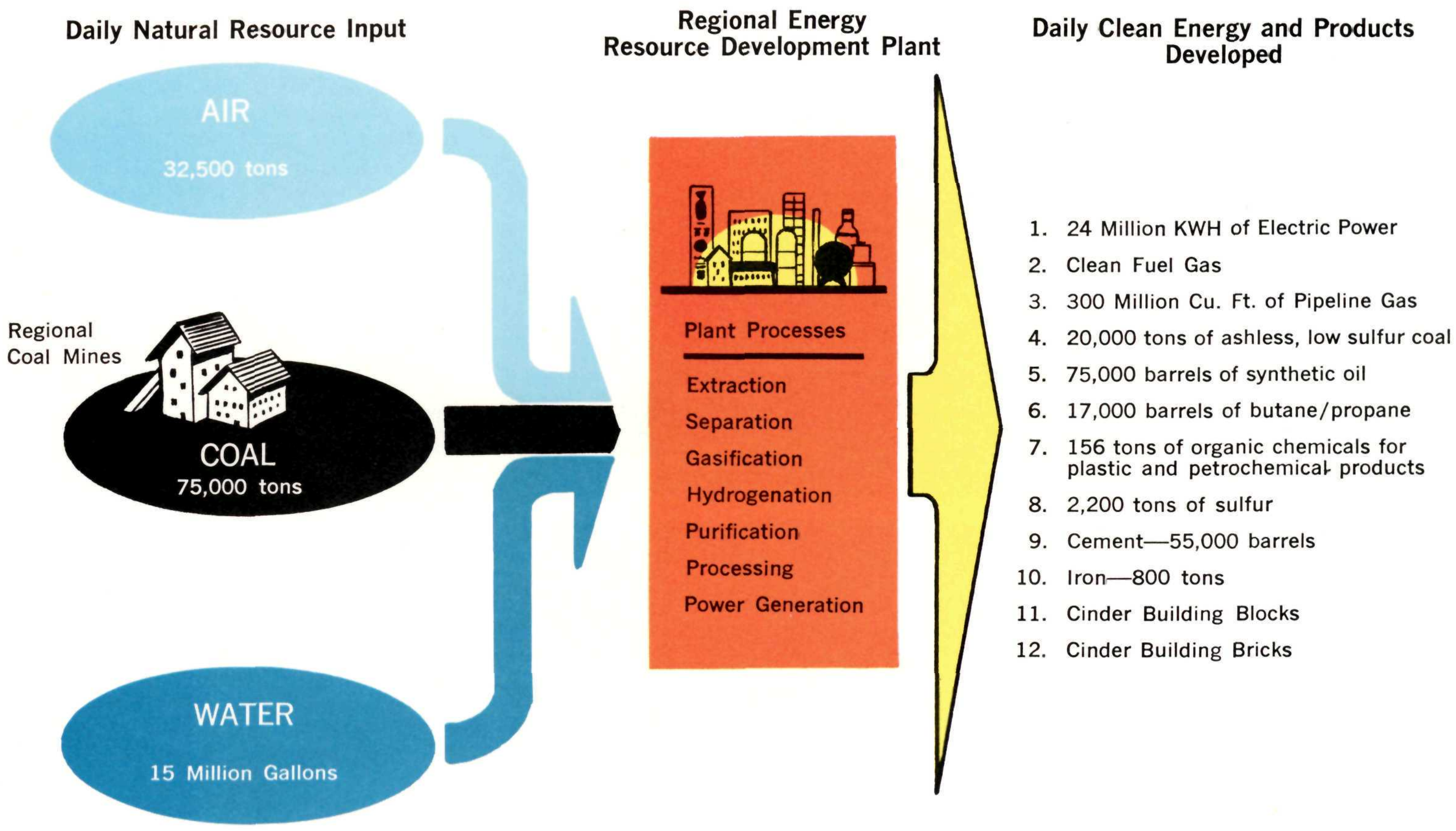
"The Department of the Interior has been working with natural gas and coal industries on research to advance our coal gasification effort. . . . We are determined to bring greater focus and urgency to this effort."

In following the President's directive, Secretary of the Interior Morton has assigned top priority to coal gasification among all departmental programs related to coal conversion.

The Office of Coal Research and the Bureau of Mines have led in the gasification effort, the former by administering contracts for joint funding of pilot plants and the latter by conducting research of its own.

On August 3, 1971, Secretary Morton signed an agreement with the American Gas Association for joint financing by industry and the Federal government of a research program which will cost approximately $120 million over four years. Three pilot plants will be in operation under the agreement, with each testing a different process directed toward converting coal to quality pipeline gas. The Office of Coal Research is administering this overall research

A look at the Future of Coal Gasification—Regional Energy Resource Development Plants


Daily Natural Resource Input
AIR
32,500 tons
Regional Coal Mines
COAL
75,000 tons
WATER
15 Million Gallons
Regional Energy Resource Development Plant
Plant Processes
Extraction
Separation
Gasification
Hydrogenation
Purification
Processing
Power Generation
Daily Clean Energy and Products Developed
1. 24 Million KWH of Electric Power
2. Clean Fuel Gas
3. 300 Million Cu. Ft. of Pipeline Gas
4. 20,000 tons of ashless, low sulfur coal
5. 75,000 barrels of synthetic oil
6. 17,000 barrels of butane/propane
7. 156 tons of organic chemicals for plastic and petrochemical products
8. 2,200 tons of sulfur
9. Cement—55,000 barrels
10. Iron—800 tons
11. Cinder Building Blocks
12. Cinder Building Bricks

program, and the American Gas Association is a joint sponsor.

The first of the pilot plants, erected in Chicago at a cost of $7 million, is testing the HyGas process developed by the Institute of Gas Technology. This is a hydro-gasification process where residual char is gasified with steam using electrical energy as the heat source. Its advantages are: (1) it works at pipeline pressure eliminating the need for compressors; (2) the raw gas from the hydrogasifiers contains a high percentage of methane, thus minimizing the size and cost of the methanation section, and (3) the transfer of char and gases between the hydrogasifier and methanator at equally high temperatures and pressures minimizes energy requirements.

The second pilot plant, completed recently in Rapid City, South Dakota, at a cost of $9 million, is testing the Carbon Dioxide (CO_2) Acceptor Process, which utilizes the reaction between hot lime and carbon dioxide to furnish required gasification heat. The process is designed to convert lignite into a methane-rich, sulfur-free synthetic pipeline gas. The advantages are that the process does not require a pretreatment step and that it produces a product gas, free of carbon dioxide and nitrogen, without the use of either oxygen or hydrogen.

The third pilot plant is being constructed at Homer City, Pennsylvania, on a site donated by the Indiana County Development Corporation. The contract, $24.8 million, is the largest ever awarded by the Office of Coal Research. Research at Homer City will be performed by Bituminous Coal Research, Inc., on the Bi-Gas Process for producing high-Btu pipeline gas from coal. The process, based on the use of oxygen, reduces equipment complexity and leads to high capacity conversion of coal at lower capital cost.

Several other projects of a lesser scale are being carried out during the research phase in order to make use of the results in the pilot plants as early as possible. It is anticipated that research also will be done on several other coal conversion processes under joint industry-government sponsorship.

Meanwhile, the Bureau of Mines has been working since the early 1960's to develop its Synthane Process for making synthetic methane (natural gas) and to prove its commercial feasibility. The Synthane Process produces a sulfur-free gas comparable to natural gas in Btu content. The process is relatively simple and cheap because it employs fewer steps, and therefore less equipment, thus reducing both capital and operating costs.

A contract was awarded by the Bureau of Mines in June 1970, for the design of a prototype plant capable of producing one million cubic feet a day of pipeline quality gas. However, pilot plant studies are necessary to demonstrate the operational features of the process on a larger scale, as well as to permit further refinements and to further encourage industry to build full-scale plants. The Interior Department sought an increase of $4.5 million in its 1973 budget to construct such a pilot plant. This would bring the 1973 total for Synthane work to $6 million.

Estimates show that, from a commercial plant designed for a daily output of 250 million cubic feet of Synthane with a heat content of 930 Btu, gas would cost about 43 cents per 1000 cubic feet, and would return an acceptable profit when sold at 54 cents per 1000 cubic feet. Costs for pipelining the gas to its final destination are not included.

It is anticipated that the Interior Department's primary involvement in high-Btu coal gasification will end in five years, or through the pilot plant stage. After that time, the industry can be expected to assume primary responsibility as the processes enter the demonstration phase, which would bear reduced Federal funding.

"Coal presents us with a great opportunity—and a great challenge," Secretary Morton said in signing the historic agreement of August 3, 1971, with the American Gas Association for joint Government-industry funding of the research program. "When converted to gas, coal is a clean burning, easily transportable fuel. It is our Nation's largest single energy resource and represents more than three-fourths of the Nation's known total fossil fuel reserves. Through applied technology it can help supply the Nation's demands for clean, convenient energy from secure domestic sources.

> "
>
> ***. . . Coal presents us with a great opportunity—and a great challenge . . .***
>
> "

"We look toward the day—hopefully during the latter part of this decade—when it will be possible to utilize the data and technology now being developed. We are confident that this important first step—to accelerate the development of the coal gasification process in cooperation with private industry—will prove to be of great benefit to the Nation in the years ahead."

Water and the West

When Daniel Webster, speaking on the floor of the U. S. Senate in opposition to westward expansion of the Nation, described the western United States as a "vast, worthless stretch of desert and prairie land," he was talking of an area that had all the natural resources to support habitation except water. The few rivers that existed flooded in one season, destroying life and property as they rushed to the sea, and shrank to saline trickles in the next. The good soil, the sunshine and the natural beauty were there, but without water they were virtually useless to man.

Water always has been the catalyst that makes the other natural attributes of a region hospitable to man. In many places Nature has provided just the right amounts of water for man to develop an acceptable environment for living; in most of the western United States she has not. So man himself has had to assume the task of providing it.

The Bureau of Reclamation was established in 1902 to develop the water and land resources of the West, to make arid and semi-arid acres capable of settlement by the Nation's growing population. The first need at that time was for irrigation on the drylands so that man could grow food and fiber to establish a viable economic base. But as the water needs of the West escalated and were altered in nature the Bureau's program changed to meet these needs. Its functions multiplied to include municipal and industrial water supply, hydropower generation, flood control, river regulation, outdoor recreation, fish and wildlife enhancement, water quality improvement, and maintenance of a pleasing environment.

In large part it has been development of the West's water resources by Reclamation, other Government agencies, and private enterprise that has transformed the area from Webster's "vast, worthless stretch of desert and prairie" into a region of fruitful farms, prosperous communities, and beautiful parks and recreation areas.

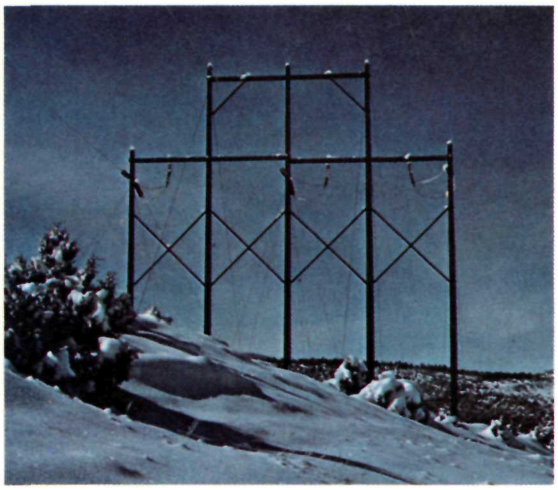
Along the way, this development has caused some problems. Since our natural resource wealth seemed limitless, it often was wasted, frequently despoiling our natural environment in the process.

But today there is a great awareness throughout the Nation that we must do more to insure using our natural resources without wasting or degrading them and in such manner as to enhance, rather than harm, our environment.

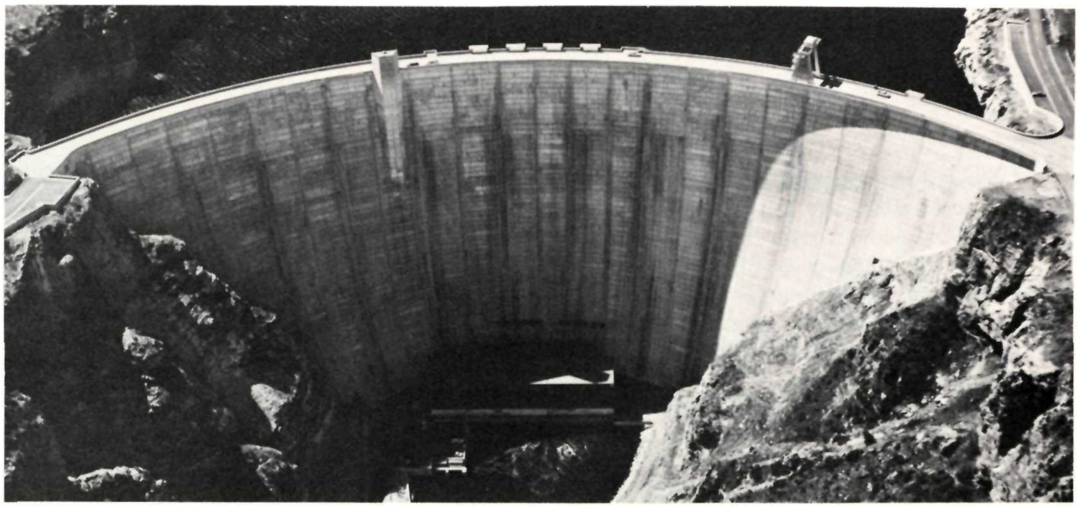
Man's environment includes not only his natural surroundings but the conditions of his daily life. A satisfactory environment encompasses acceptable opportunities for earning a livelihood in an atmosphere that enhances human dignity. We must manage our natural resources, including water, in such manner as to maintain this total environment. In short, we must maintain the highest level of true conservation. As Theodore Roosevelt said when he signed the Reclamation Act in 1902, "Conservation means development as much as it does protection."

Generation of hydroelectricity is an outstanding example of water resource development that contributes significantly to the economy and living conditions of an area without abasing the environment. This form of power generation does not pollute land, water, or air. Also, virtually none of the falling water which turns the turbines of powerplants to produce electricity is expended. It simply performs an added service on its way to irrigate fields, regulate streams, pour from faucets in kitchens and industrial plants, and to perform myriad other functions.

There are five power marketing agencies in the Department: the Bureau of Reclamation, Bonneville Power Administration, Southwest Power Administration, Southeast Power Administration, and the Alaska Power Administration. They sell hydroelectric energy generated at the 112 large and small Federally operated powerplants, at dams on the rivers in 33 States. In Fiscal Year 1971



Harnessed water serves many purposes. It can irrigate barren lands, produce electricity for far-away cities, and provide a setting for recreation. In developing water resources of the West, the Department places emphasis on multi-use while protecting Indian water rights and environmental values.



Interior Department's water conservation programs include provision of storage facilities such as Yellowtail Dam in Montana, as well as experimental and operational contracts for cloud-seeding. Sources of "new water" encompass not only streams and rivers, but also the oceans, skies and underground.

they sold over 106 billion kilowatt hours of hydro-energy for ultimate use in the homes and industries of the western and southeastern United States. Gross revenues from the operations totaled more than $379 million. Preference in the sale of this power is extended to public agencies, cooperatives, and organized Indian tribes, and the rates are reviewed periodically to assure their sufficiency to finance operating and maintenance costs, as well to repay the capital investment, with interest, within 50 years.

Along with the Bureau of Reclamation, the U. S. Geological Survey has directed its programs to appraising and accounting for the water resources of the West. Aside from the enormous store of streamflow and water-quality records and other basic water data, the Survey has completed numerous studies that contribute directly to better understanding of hydrologic conditions and to better planning, development, and management of western water resources.

Instead of allowing rivers to flood in times of surplus, as during the spring runoff, the Bureau of Reclamation stores the excess water behind dams on rivers and streams for release in times of need. Reclamation storage reservoirs in 1970 provided water to 15.6 million people, about 30 percent of the population of the 17 Western States.

By storing surplus water for beneficial use, the Bureau prevents much destructive flooding. Damages estimated at $68.5 million were averted during 1970 by Reclamation projects. Flood control benefits realized since 1950 total nearly $770.7 million, a figure which exceeds by about 27 percent the total allocated project flood control expenditures, including construction, operation and maintenance costs in all projects.

Flood control, along with supplemental irrigation water supplies and outdoor recreation, is a principal benefit to be derived from the Lower Teton Project being developed by the Bureau of Reclamation. Flood damage along the lower Teton River, a tributary of the Snake, has been extensive in years past, serving as a brake on the economic development of Idaho. The project's key feature, an earthfill dam on the Teton near the eastern border of the state, is currently under construction after a delay for a reanalysis of the project's environmental impact undertaken at the request of the Environmental Protection Agency. This reanalysis indicated that the benefits of the project warrant construction of the project as authorized by the Congress.

Farther down stream on the Snake River another controversy has arisen, with some environmental organizations protesting plans of investor-owned utilities to build additional dams for hydroelectric production in the deep canyon of the Snake in western Idaho.

With the Nation's population rising, more and more people migrating westward, and the per capita use of water increasing at a spiraling rate, the presently available water supply of the western States is insufficient to meet the needs of even the immediate future. To solve the problem of today's water scarcity in the West and the even more dire scarcity that threatens tomorrow, the Bureau of Reclamation, along with other Government agencies and private interests, is seeking ways to augment that supply. The Interior Department is looking for additional water not only in surface rivers and streams, but in the ocean, in the sky, and underground.

One of the most promising sources of "new" water is the geothermal deposits underlying the Imperial Valley in Southern California. The great quantities of water that are expected to result from geothermal development in that area could be refined and treated to add much-needed water to the flow of the Colorado River, and could be used to alleviate the salinity of the lower portion of that overused waterway.

Another source of "new" water is in the clouds that float over the land, frequently carrying their moisture with them beyond arid areas thirsting for

it. The Bureau of Reclamation's Atmospheric Water Resources Management Program, frequently referred to as Project Skywater, has been in existence since 1962. It is a comprehensive program of research and engineering intended to help meet the Nation's growing water needs by using cloud-seeding techniques to provide a supply of clean, fresh water —and to do it efficiently, economically, and in a socially and ecologically acceptable manner.

Results of program research indicate that under certain meteorological conditions precipitation can be increased from 10 to 30 percent and application of the emerging technology nationwide would add hundreds of millions of acre-feet of fresh water to the available national water supply every year.

Several large scale pilot projects have been established by the Bureau under differing meteorological and topographical conditions and in varying geographical locations to test the feasibility of beneficially applying already developed techniques on an operational basis.

The Colorado River Basin Pilot Project is the largest and most comprehensive project to date. Designed to evaluate a winter-seeding program to augment snowpack in a high mountainous area, the project also includes studies of the weather modification upon the area's ecology and research into the effect of precipitation management on avalanches.

It has been estimated that full-scale operations of a winter-seeding program could produce enough additional runoff in the mountains to add 2 million acre-feet of water annually to the flow of the Colorado.

Among other major Bureau of Reclamation weather modification projects underway is one in the Pyramid Lake area of California and Nevada. Its purpose is to study the possibility of producing additional precipitation from winter storms in the Truckee-Carson River drainages and thus to make more water available for Pyramid Lake, which is the center of considerable recent controversy among some conservationist organizations, the resident Indians on whose land the lake is located, and non-Indian water users in the area. The lake receives its water from the Truckee River, which has its origin in Lake Tahoe.

The entire area of the Truckee and nearby Carson River basins is one of short water supply. The level of Pyramid Lake has been receding ever since it was first recorded by explorers in 1844. Diversion of water for irrigation began as early as the 1850's, and today the water is also used for municipal and industrial purposes and for recreational development. Users diverting water from the rivers possess water rights under California and Nevada State law, and the Pyramid Lake Paiute Indian Tribe also owns water rights assigned to its lands.

Department of the Interior operating regulations initiated in 1967 for the Newlands Reclamation project, which diverts water from both rivers, chiefly for irrigation, have resulted in more efficient use of water and have contributed to an 11-foot rise in the lake's water level from 1967 to 1971. A special task force composed of representatives of the Department and of California and Nevada has studied the problem for several years past and has recommended a number of possible remedies. Among these is the pilot program for increasing the water supply by cloud-seeding.

The task force noted that there would be some adverse effect upon existing wildlife, recreation and pasture facilities if its recommended measures for water management are implemented. These areas would be reduced in size by increasing the water level of the lake. The task force, therefore, recommended that actions be taken to maintain the viability of these areas.

The Interior Department's Bureau of Land Management manages the watersheds on 450 million acres of public land in the West and Alaska.

Some 123 million acres of this land is highly erosive. Although the rainfall on these lands is limited, the rain that does fall is apt to come in the form of violent summer storms that cause severe erosion.

BLM estimates the annual runoff from public lands to be equivalent to one-half inch of rain. Because of the large area involved, BLM's total contribution to streamflow from public lands in the West amounts to 6.1 million acre feet of water.

Soil sediment is the single greatest pollutant of water coming from public lands. The lands contribute a sediment load of 544 million tons to western streams each year. This sediment load is clearly disproportionate to the amount of annual runoff.

BLM seeks to control erosion on public lands through a watershed program that includes the establishment of vegetative cover, construction of structures to detain and divert water, and the construction of reservoirs and other impoundments.

In the 17 coterminous Western States, precipitation ranges from more than 200 inches per year in parts of coastal Washington, to less than 2 inches per year in Death Valley, California. The wide range in precipitation in the West has led to development of elaborate systems of dams and canals to store, divert, and transport to points of water deficiency, the water that falls in areas of abundance.

In the Colorado River system, many dams have been built over the years. In addition to their other purposes, the system of reservoirs has a noteworthy effect on the chemical quality of river water, which—to begin with—is greatly affected and deteriorated in quality, by natural inflows of brackish and saline water that emerge from springs throughout the system. In its uncontrolled state, the river carried snowmelt and rainfall runoff at high-flow stages that contained not only small concentrations of dissolved solids, but also large concentrations of suspended sediment. At low flow, much of the water in the river was clear ground-water effluent—largely from springs—the volume was small, and the chemical concentration was high.

Today, under control of man, water in the lower Colorado River is of nearly uniform chemical concentration throughout the year, and flow rates can be controlled within limits to meet virtually all needs.

To discover the future water needs of the entire West and establish ways to meet these needs without undue detriment to the environment, an ambitious westwide study has been initiated. Authorized by the Colorado River Basin Project Act of 1968, the study is one of the broadest water planning programs ever undertaken.

With the Bureau of Reclamation as the lead agency, a Study Management team charged with responsibility for presenting an array of alternative water development, preservation, and compromise programs throughout the West, is composed of representatives of Western States and several Federal bureaus, offices, and agencies. Other departments identified with water planning have joined the Department of the Interior in assigning planners, economists, social scientists, and other technical personnel to the Management Group at Denver.

Individual State programs are being incorporated into the Westwide Study; desires of districts, commissions, and boards are heard and considered. Information gathered from throughout the 11 States will be shaped into programs and plans. These will provide the decision makers with the findings and recommendations necessary to chart their course.

Specific recommendations resulting from the Westwide Study are to be presented by the Secretary of the Interior to the President, National Water Commission, Water Resources Council, and the Congress by June 30, 1977. Progress reports are to be submitted biennially.

A projection of the Water Resources Council's 1968 National Assessment is that water demands in sections of the West will slightly exceed supply in 10 years and exceed supply by 140 percent in 2000. The Western U. S. Water Plan offers hope to meet the demands through a pooling of talents and energies. The multiple-agency, multi-objective water planning effort provides a unique opportunity to determine how the peoples of the West will use what water they have. It also constitutes a vehicle by which the West can determine its water planning priorities now and into the next century, employing new economic, environmental, and sociological approaches, and the latest in water augmentation technology.

Included in the new water technology is the series of breakthroughs being made by the Interior Department for desalting seawaters and brackish waters to increase existing water supplies of arid regions. The Office of Saline Water, an agency of the Interior Department, is on the threshold of proving out advanced techniques by the use of prototype plants to produce vast quantities of fresh water at low cost.

Overall, the desalting program encompasses four key areas of activity: conversion of seawater at coastal points; salinity control of major rivers; large-scale use of inland saline waters; and improvement of municipal water systems.

Currently, for desalting seawater in 50 million gallon-per-day (gpd) prototype plants or greater, OSW is combining two reliable distillation systems in a module-type unit now under construction in Orange County, California. It will produce 3 million gallons of fresh water daily. For purifying brackish (less salty) waters in multi-million gallon-per-day plants for the first time, the agency will construct and operate test bed plants using membrane systems. These operations are expected to provide performance data that will serve as guidelines for scaling up equipment for large prototype plants.

In the area of membrane technology, especially reverse osmosis, OSW is studying various types of test beds and prototype plants with capacities ranging up to 5 million gallons per day. The RO process utilizes semi-permeable membranes and simple mechanical pressure to separate water from salt. Eventually, RO membranes will be able to desalt seawater as well as brackish waters.

Relatively recent research results have renewed interest in another desalting process—freezing. With improvements in the rate of ice production and in the washing of ice particles, this secondary freezing process has considerable potential because it requires no pre-treatment of water and has no scaling or corrosion problems.

The seawater conversion program proposes construction of desalting plants on the West Coast, the Gulf Coast, and participation in a nuclear desalting industrial complex in Puerto Rico. The processes and plants would vary in type and size to meet local conditions and to provide comparative cost and operating data.

The salinity control program would embrace studies and construction of desalting facilities on the Colorado River, San Joaquin Valley, Gila River, and acid mine drainage sources in the eastern and western U. S.

Large-scale use of inland brackish waters will involve the development of technology to desalt large bodies of inland brackish waters, including geothermal brines in the Southwest.

Programs for controlling erosion on public lands and for converting salt and brackish water into usable water supplies are vital to improving quality of life for West's growing populations. New techniques for water conversion are being perfected under contracts let by Interior's Office of Saline Water. Future OSW plans include construction of large seawater conversion prototype plant.

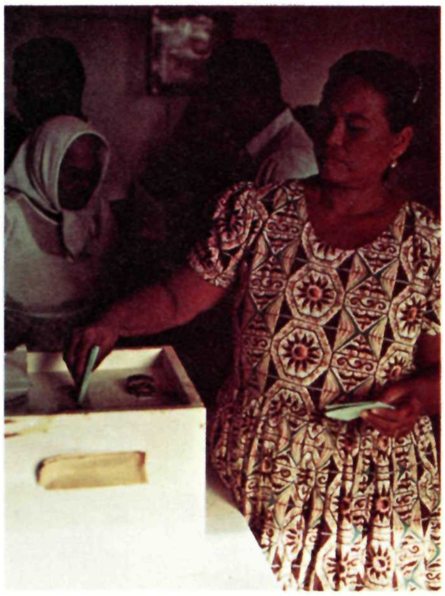
The improvement of municipal water supplies may require a combination of technologies. The specific situation, need and available resource will determine the means for solution.

Specifically, future plans of the Office of Saline Water include the construction of a 40 to 50 million gpd seawater conversion prototype plant on the coast of California; construction of an 8 million gpd distillation plant in Brownsville, Texas; and expanding to a 15 million gpd prototype of the distillation module under construction in Orange County, California.

Approximately 750 desalting plants of 25,000 gpd or larger are in operation or under construction throughout the U.S. and the world. These plants are capable of producing nearly 350 million gpd for cities and industries. The total water desalting production should double or triple by the end of this decade.

The actions of man as he develops streams, rivers, and oceans for his use, including the production of electrical energy, have resulted in complex interactions of the waters, their environment, and man himself.

There are no pat answers to the general question, "Is development good?" It is vitally clear, however, that we must continue to seek understanding and to think with clarity and vision from a firm basis of reliable fact. Given enough facts, adequate scientific understanding of processes, and enlightened good will on the part of all, it seems likely that we can develop plans, structures and processes that will optimize the use of our western water resources for man at minimal cost to—and locally to the enhancement of—plants, creatures, and the whole environment.



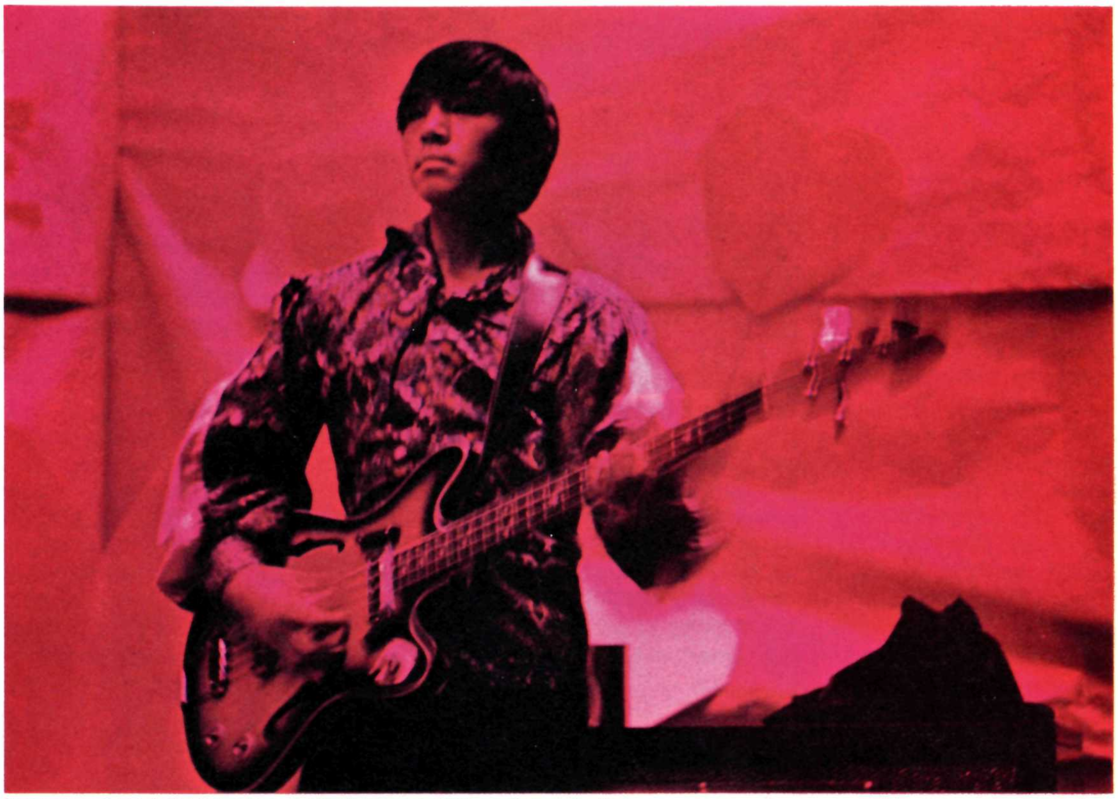


Photo by Emory Kristof © 1971 National Geographic Society, Above—top left Ramon R. Hernandez, Guam

People in Transition

Less by historic design than by the circumstances of American history, the Department of the Interior became the administering agency of certain lands that are apart from the public domain; and, consequently, it also became directly concerned with the people of those areas.

In 1849, the year the Interior Department came into existence, the overriding need was for a Cabinet-level operation that would oversee the civil development of the "interior" lands—that is, the territories of the interior continent to which the United States laid claim. Those territories eventually became parceled up into States, we acquired other territories, and these lands, too, were placed in Interior's house for civil administration. They included Alaska and several islands in the Atlantic and the Pacific oceans.

New housing on the Flathead Indian Reservation, new votes in Micronesia, rock music in Eskimoland, pre-school photography for Indians, fun in the sun on Guam, and a taste of the old tradition in the Three Kings Parade (Epiphany) in the Virgin Islands.

Moreover, within the boundaries of what now constitutes the first 48 States, treaties and other agreements with various Indian tribal groups led to the demarcation of lands as tribal holdings, apart from State, Federal or private claims. The Interior Department, with its civil management and development orientation, was viewed as the logical shelter for those Indian lands and tribes—a decision that recognized and sought to ameliorate the effects of military dominance in our previous relations with Indians.

Well on the way into its second century, the Interior Department today continues to be the sheltering agency under which most Indian-owned lands and also the remaining island territorial areas are administered. On the continent, including Alaska, numerous Indian tribes and groups still have ties to the Department. In the Caribbean Sea, several islands of the Virgins group—chiefly, St. Thomas, St. Croix and St. John—are linked to the United States under Interior's administration. And in the Pacific, the United States, through Interior, maintains responsibilities for Guam in the western Pacific and a group of seven islands in the South Pacific known as American Samoa.

Moreover, the United States since the end of World War II has served as trustee, under an agreement with the United Nations, of former Japanese mandated islands of the Marianas, Carolines and Marshalls groups—part of the Micronesian archipelago. The Trust Territory of the Pacific Islands, as these are called, was under the U.S. Navy in the period immediately following the war, but control was transferred to Interior in 1951 to emphasize the civil nature of the trusteeship.

To hold populated lands in trust requires the establishment of relationships with and responsibilities for the people of those lands. Thus, the Department of the Interior, although generally regarded as the custodian of America's natural resources, is deeply immersed in social and economic programs in behalf of all the territorial and "trust lands" people.

Marked differences exist between Interior's relationships with American Indians and island people, as the following reports relating to current policies and trends reveal.

Citizenship status creates the most obvious distinctions. American Indians are citizens of the United States and the States in which they reside, with all the franchise rights of full citizenship; in addition, their citizenship status within their tribal unit is also recognized on the level of domestic inter-governmental relations. Virgin Islanders and Guamanians also hold U.S. citizenship—but they have no vote in the United States Congress. American Samoans are United States nationals. Citizens of the Trust Territory are neither citizens nor nationals of the United States.

The political, social and economic changes taking place within the trusteeship relationship today are presented here as the basis for demonstrating the changing Interior Department role with respect to peoples and places in transition.

Those Who Came First To America

Far from being a vanishing race, American Indians are increasing in numbers at a greater rate than the United States population as a whole, according to the 1970 national census, which reported nearly 850,000 Indian citizens. The count ten years earlier had been 550,000—although it probably represented a less complete survey of the Indian racial breakdown. However, the reservation population remains in the 480,000 category—people generally apart from the outer community. Migrations to urban America have often been unsuccessful, because a happy blending of Indian and non-Indian culture is difficult, if not impossible, for those oriented strongly to their land and their culture.

The reservation-based Indians live chiefly in the Western states, with one-fourth the entire Indian American people being centered in the Southwest. The Department of the Interior is the trustee agency for most Indian lands, and Interior's Indian development programs are operated through the Bureau of Indian Affairs. Urban Indians do not come under BIA's purview for services; but trust-status lands owned by individual Indians, even though such individuals no longer live in reservation areas, may continue to be administered by Interior.

Traditional sociological and cultural factors have kept Indian groups largely aloof from each other over the years. Not until the social action movements of the 1960's caught up with youthful Indian Americans did Indians begin to speak of themselves as "Indians"—not simply as Sioux, Zuni, Apache, Choctaw and each of the other one hundred and more tribal designations. The white man, from colonial days to the near present, has been largely unaware of the distinctions in motivations and aspirations between one group and another—although it is apparent from their different physical characteristics and life styles that American Indians have many differing roots.

The lack of inter-tribal homogeneity was perhaps the cause of Indian capitulation to the colonizers and settlers from Europe. Even the relatively well organized Iroquois confederacy was only a limited form of unity. Most tribes were, in their own minds, at least, separate national groups.

During the early days of English colonization, and on into the first two decades of the American Republic, the white man's government dealt with Indian tribes on substantially a sovereign-to-sovereign basis dealing with each tribe individually. Trade arrangements and mutual defense alliances were common between one European nation and one tribal group.

It is quite possible that this tribal nationalism was also the eventual cause of a militaristic American stance against Indians during this country's westward expansion period. To early American settlers Indians seemed not so much a people as a series of sovereign foes or competitors. It was not until the American public became aware that the American cavalry were attacking Indian women and children as well as warriors and braves that a dramatic turnabout came in our national views about Indians.

Unfortunately, we moved from the extreme of conqueror to the other extreme of paternalism. To persuade Indians to settle down and farm the land was the goal, and formal schooling and a modicum of Federal assistance were the methods offered as enticement. The goals and the methods were alien to Indian experience, and served to prolong Indian misery and government confusion up to the near present. A culture gap solidified and broadened as white America moved into a twentieth century society while Indians clung defensively to their reservation lands and culture.

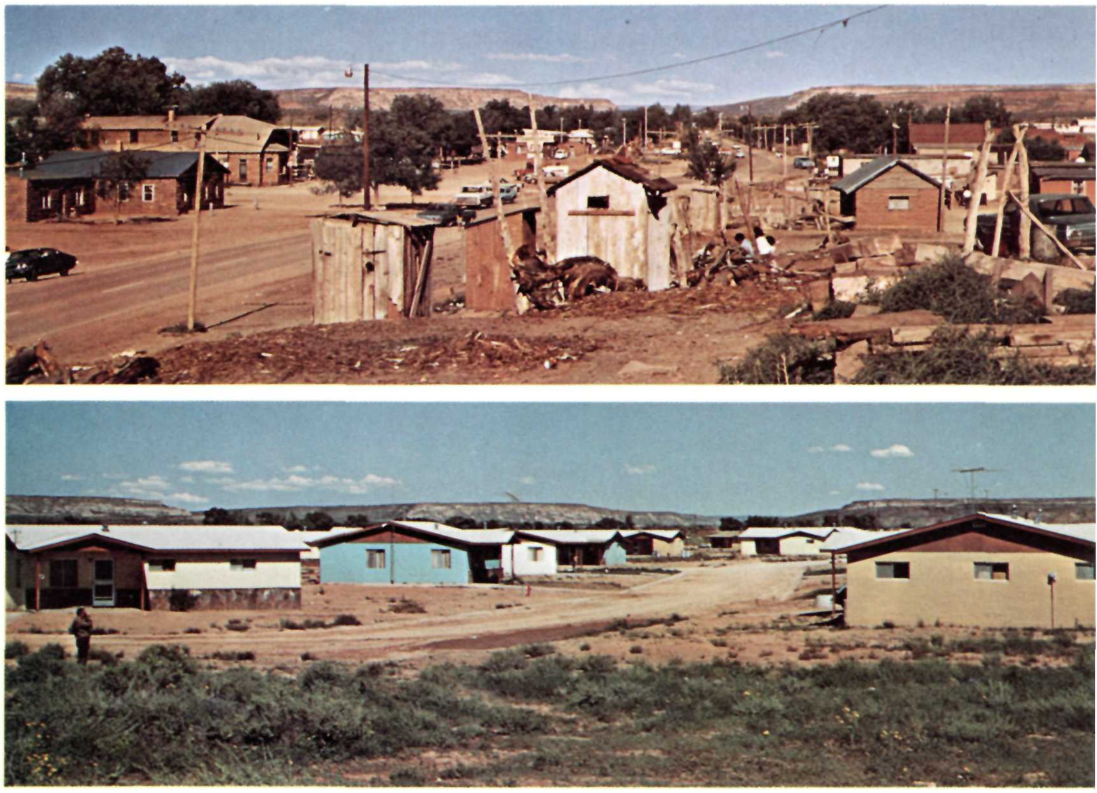
> “. . . ***In the process of Indians discovering each other, the American public has also been treated to some revelations . . .***”

It never occurred to the bureaucrats to consult Indians on what they sought from America or what they sought to give to it. And it never occurred to Indians to volunteer any information—until the new generation of youth, emerging out of the 1960's, schooled and articulate but resentful of the chains of uncomfortable alien custom that bound them, found that one way to be heeded was to speak with one voice, in chorus.

In the process of Indians discovering each other, the American public has also been treated to some revelations. It is now out in the open: Indians are are not monosyllabic; Indians don't like handouts; Indians have a lower life expectancy than most other Americans because the infant death rate brings the average down; often they receive welfare aid; until 1960, the average educational level among Indians was sixth grade; until 1935 the Federal government never built an inch of road on a reservation; until the 1960's there were very few Indian attorneys, only a handful of Indian doctors, and Indian engineers were virtually unheard of.

This is the story that the Indian youth movement brought into the open. It caused a tremor in the Federal bureaucracy and led to the creation of the National Council for Indian Opportunity, a consortium of Federal agencies spearheaded by the Vice President of the United States, to zero in with Federal aid to Indian communities and individuals. The Federal spending for Indians quadrupled within less than five years—to a present spending level of about a billion dollars annually.

Since that time, and through joint efforts of BIA and the Economic Development Administration, considerable tourism development has begun in reservation areas, in places where the scenery and recreational resources are abundant; industrial activity has been engendered in Indian communities that are in proximity to centers of large population and are serviced by good transportation, communication and other features necessary to business development; a five-year plan worked out between the BIA and the Department of Housing and Urban Development calls for the building of about 8,000 new housing units annually in reservation communities; numerous small, Indian-owned businesses have been financially



New housing to supplant the old, new hopes to support old dreams on the Zuni Reservation in New Mexico—and elsewhere, too, on Indian lands.

As he proposed in his message to the Congress on Indians, President Nixon signed into law legislation returning 48,000 acres of land and Blue Lake in North Central New Mexico to the Taos Pueblo Indians. Shown are President Nixon and Vice President Agnew with Paul Bernall (left) and Quan de Quesus Romero following signing of the bill.

seeded; Federal scholarship aid for higher education has quadrupled to a present level of around $15 million from the BIA alone; elementary and secondary schools are benefitting under various Federal aid to education laws; Indian communities are taking a direct interest in the operation of their own local schools; and considerable mineral exploration leasing has resulted in new income to several tribes.

Coupled with all-out Federal aid, there has been a turnabout in the approach to Federal spending for Indians, putting more of the management into the hands of Indians in the Bureau of Indian Affairs, and relying more on the expressed wishes of tribal authorities at the local levels. Paternalism and puritanism began to fade from the Federal Government's Indian policy, and Indian self-propulsion began to emerge.

President Nixon submitted to Congress on July 8, 1970, an historic message, setting forth his policy of "self-determination without termination." He delineated its goal: to strengthen the Indian's sense of autonomy without threatening his sense of community, to assure the Indian that he can assume control of his own life without being separated involuntarily from the tribal group, and to make it clear that Indians can become independent of Federal control without being cut off from Federal concern and Federal support.

A progressive package of legislation accompanied the President's 1970 message. Some of these proposals have stimulated a new approach to the Bureau of Indian Affairs relationship with Indian tribes.

For example, the President proposed the establishment of an Indian Trust Counsel Authority, an independent agency to represent individual Indians or tribes or groups in matters involving their natural resource rights, in all courts and administrative agencies, Federal and State. Subsequently, Secretary of Interior Rogers C. B. Morton instituted an office of Indian Water Rights.
The President also proposed an Indian financing measure, which would create a substantial revolving loan fund and would guarantee and insure loans to individual Indians and tribes up to a total of $200 million. This concept has generated the Indian Small Business Development Fund, greater industrial development loan activity under the Economic Development Administration, and a new push for road building.

Some contracting out to the tribes of services usually performed by BIA has also begun.

By early 1972 a five-point program had been formulated to accomplish a redirection of the Bureau's efforts into patterns that would depart significantly from the "melting pot" directions it had espoused during most the present Century.

The central theme of this program is reservation-by-reservation development. The Indian reservation is much like a county government with the Tribal Council equivalent to an elected board of supervisors. An education, health, police and fire protection, zoning, economic development, community development and zoning—these and similar county-government responsibilities are now also receiving the attention of tribal governing bodies. Like any other local unit Indian reservations vary in populations and extent of development, and consequently have differing priorities. These differences are what the BIA's new direction recognizes.

In the past, the Bureau of Indian Affairs has built its financial estimates and budgets on the basis of the total amounts required nationwide for Indian education in Federal schools, for economic development of reservations, for social and community service projects, and for resources development. Reservation priorities, which should be governed by consideration of resources potential and population needs in concert, have tended to become obscured in the overall rather than local approach.

Under the new thrust of reservation-by-reservation development the requirements for a particular reservation will be addressed, priorities set to satisfy the needs of that reservation, and the funding process carried through on a reservation basis. The program is being initiated by a series of detailed negotiations between a tribe and various BIA and other Federal representatives at reservation and area levels. The process of negotiations will be repeated in Washington and concluded with the signing of an agreement by the Commissioner of Indian Affairs and tribal officials in which the commitments and responsibilities of all parties are spelled out in detail. In this way the planning and funding required for a given reservation will be better aligned with the particular needs of that reservation.

The program was initiated by the selection of 28 reservations for this type of planning and funding, and will gradually be expanded to all reservations requesting it.

Also important to the Bureau's program is the protection of natural resources, particularly water. For the Indians to have a satisfactory life on their reservation, they must have the natural resources from which to build. As most Indian reservations are located in the West where water is short, the question of Indian water rights is becoming more and more critical. The Bureau of Indian Affairs has established an Indian Water Rights Office reporting to the Commissioner —who, for this function, reports directly to the Secretary—to spearhead the attack on any and all forces which seek to deprive Indians of their water. This office will:

—Identify Indian water problems;

—Establish action and priorities plans to deal with water rights issues;

—Maintain a monitoring system over Interior agencies and activities with respect to Indian water issues;

—Act as control center for all activities relating to Indian water rights;

—Supervise development of technical data to support activities.

The National Tribal Chairmen's Association, which was formed in April 1971 at Pierre, S.D., discussed tribal matters with Secretary Morton, Bureau of Indian Affairs Commissioner Bruce, and other members of Interior's staff.

The third of the five points in the BIA's 1972 program is redirection of employment assistance. The BIA's Employment Assistance Program is an outgrowth of the termination policy of the 1950's—supported at that time by the Administration and a forceful element of the Congress—which would end the land trust responsibility of the Federal Government. As a corollary to that policy, the Employment Assistance Program was designed to take Indians off the reservation where employment opportunities appeared meager or nonexistent, place them in training in urban settings and assist them to find jobs when trained. Although there are Indians who are today well adjusted in urban life and working at good jobs, for many the end result was unfortunate. The Indian in too many cases was merely transferred from the reservation ghetto to an urban ghetto. In many cases he returned to the reservation trained for a job which did not exist there.

The redirection of the Employment Assistance Program in 1972 emphasizes job training on or near the reservation so that, where the Indian desires, employment assistance training can benefit the Indian on his home ground, and his training can be put to use in a job which is needed for the economic development of his reservation. A feature of this approach has been creation of Indian Action Teams to be comprised of trainees on each reservation who will be trained as a skills pool for reservation development work, particularly in roads and utilities construction.

The fourth element of the 1972 BIA program is road construction. More often than not—in about 84 percent of the cases—roads on Indian reservations are meager trails hampering not only potential commerce and industry, but thwarting educational opportunity, health services, and new housing construction. Of 22,000 miles of BIA-built reservation roads, only 2,200 miles are paved.

Working in conjunction with tribal road commissions, the Bureau of Indian Affairs has determined which road improvements will produce the greatest benefit for Indians.

The final element in the BIA's 1972 plan is Indian control of schools.

In 1775, the Continental Congress took a first step toward providing for education of Indians by appropriating $500 for support of Indians at Dartmouth College. In 1819 the first Federal appropriation of $10,000 for Indian education was made. In 1860 the first Federal boarding school was established on the Yakima reservation in Washington.

The Federal Government bears the lion's share of financial responsibility for educating Indian children. Of the 206,000 Indian children in schools—public, private, mission, and Federal—one-fourth are in federally operated institutions. In addition, the Federal Government has a substantial responsibility for most Indian children enrolled in public schools. Under the Johnson-O'Malley Act of 1934, the Secretary of the Interior was authorized to contract with States and other agencies to provide an effective education for Indian children. Last year, more than 80,000 Indian children benefited by this act. The Federal Government is also committed to helping schools serving Indians under various provisions of the Elementary and Secondary Education Act, and has included Indian children in the impacted-aid formulas under Public Laws 874 and 815.

Increasingly Indian tribes are expressing an interest in running their own school program. The BIA has estimated that by 1973 there will be 15 schools operated by Indian tribal groups under contract. Moreover three Indian community college programs are operating with financial aid from BIA. The Bureau is also projecting that 75 or 80 special federally assisted school programs (e.g., summer programs, higher education programs, etc.) will be operated under local tribal administration.

In the course of implementing this five-point program, the Bureau of Indian Affairs will be gradually converted from a management organization to a service organization.

Tourist centers, commercial farming, new roads, schools for a new generation—all part of Indian reservation acceleration programs.

The objective is simple: To enable Indians to run their own affairs to their own satisfaction, and to provide them with maximum possible support as they strive to achieve this objective.

Trust Territory of the Pacific Islands

Just north of the Equator, curving and curling across three million square miles of the Pacific Ocean, lie three island groups—the Marianas, the Carolines and the Marshalls—that form what is called the Trust Territory of the Pacific Islands. Mandated to Japan by the League of Nations following World War I, the area came under U.S. trusteeship through an agreement under the Security Council of the United Nations after World War II.

The islands are part of the Micronesian chain, and consist of 3,000 dots of land, most of them tiny atolls, rising from the sapphire seas.

Although the oceanic areas of the Trust Territory cover an expanse greater than that of the continental United States, the entire land mass is less than the dimensions of the State of Rhode Island.

Micronesia has no true parallels anywhere else in the world. Although the indigenous population of about 100,000 people are Micronesians, with ethnic kinships to numerous other island peoples of the Pacific, the islands are so scattered and remote from one another that numerous languages developed, thwarting social homogeneity. The geography of the area adds to its uniqueness, for many of the islands are rocky formations that were thrust up from the sea eons ago when the Earth's forces were struggling to push the land masses apart, making way for the formation of oceans. The more habitable portions of Micronesia are generally the volcanic islands.

The political status of the Trust Territory is also somewhat distinctive. Although the U.S. has administering authority, it has no sovereignty over the area.

For administrative purposes, the Trust Territory is divided into six districts —the Mariana Islands, Palau, Yap, Truk, Ponape, and the Marshall Islands—with government headquarters on Saipan (which is in the Marianas group, slightly north of the separate United States Territory of Guam).

Executive authority is vested in a High Commissioner appointed by the President of the United States. The present High Commissioner is the Honorable Edward E. Johnston of Honolulu. Each of the six administrative districts is headed by an appointed District Administrator who is responsible for program operations of his district. Increasingly, authority and responsibility for program operations are being decentralized as a positive approach towards granting the people of Micronesia the opportunity to participate meaningfully in shaping their own lives and destiny. Five of the six district administrators today are Micronesians. The High Commissioner and the District Administrators are supported by a staff of some 625 non-native employees, the majority being U.S. citizens, and a Micronesian staff of approximately 6,000 employees.

The Trust Territory is entering upon what might be termed a third phase in its relationship with the United States. The first phase, from 1947 into the early 1950's, was essentially one of military guardianship under the U.S. Navy. The second phase, covering Interior Department administration up to about 1969, represented slow but steady moves toward self-government and the rehabilitation of features destroyed when many of the islands became the battleground of the Far East segment of World War II.

Traditions and transitions are evident throughout the Micronesian Archipelago.

The present phase of activity involves discussions with the Trust Territory people which ultimately should lead to a new political status for Micronesia.

Not until the early 1960's did the first breakthrough come for the Trust Territory, when the U.S. Congress tripled the previous minimal administrative budget—from about $6 million annually to nearly $18 million. Thereafter, further great jumps in appropriations for rehabilitation came steadily. By 1970, the U.S. was appropriating $50 million a year for the Trust Territory, and during 1971 and 1972 the budget called for $60 million in outlays each year.

In 1969, the newly appointed Secretary of the Interior and the newly appointed High Commissioner of the Trust Territory, following President Nixon's direction, met with Micronesian leaders to determine a program of action for the area. The results in the past two years are visible and substantial—new roads, improved harbors, new air fields, new power systems, new communications systems, new schools, new hospitals.

The capital improvement program of the central government is receiving valuable support from seven Civic Action Teams composed of C. B's (construction battalions), one from the U.S. Air Force, one from the Army and five from the Navy. The Civic Action program operates jointly with the Trust Territory Administration, which provides funds for support of the teams. The military supply trained manpower and equipment, and the Micronesians provide volunteer labor. The Civic Action teams work on a village level to help Micronesians build local water supply systems, small causeways and bridges, and local roads and to repair dispensaries and school buildings. The military supplies the territory with excess materiel ranging from ships, hospital equipment, to spare parts for vehicles; and the Navy also operates a medical emergency airlift and sea lift service from and to the remote islands of the territory.

Since 1966 the Peace Corps has been very active in Micronesia supplying volunteer teachers, agricultural extension workers, nurses, lawyers, community development workers, engineers, and a variety of other helping hands. The volunteers also train the local personnel who work with them, to provide a base for continuing local services. More than 200 Peace Corps men and women are scattered throughout the villages of the Trust Territory.

Neither American officials nor Micronesian leadership, however, anticipate that the total need for such construction as roads, schools, power plants and other modern facilities can be met for several years. Nevertheless, the accelerated capital improvement program already reflects improved social conditions and a better general economy. In the near future, tourism should become the major source of income for the Trust Territory. Development of fishing and marine resources is still lagging, but the obvious potential in this area has been recognized and is being assessed.

Meanwhile, the school years are now starting with more than 30,000 enrollments, six major hospitals and three auxiliary hospitals are in service, a major vocational training program is under way, a new school of nursing has been opened on Saipan, and the jet age came to Ponape with the opening of an international airport in 1970.

The past few years in the Trust Territory are also marked by dramatic changes on the political scene. A major obligation under the trusteeship agreement is for the United States to assist the people of Micronesia in arriving at an ultimate political status. Step by step, the people have moved toward self-government. All districts have representative district legislatures, and in 1965 the Congress of Micronesia came into being as the first Territory-wide elected legislative body.

The Year 1969 saw the start of negotiations between the U.S. and the Congress of Micronesia on the question of the future political status of the Trust Territory. With representation from the Department of State, the Department of Defense and the Department of the Interior, a United States delegation met with a delegation of the Micronesian Congress in 1969. A second meeting followed in May 1970 during which the U.S. representatives proposed a commonwealth status for Micronesia. Although the next session of the Micronesian Congress declined to accept the commonwealth proposal, it made arrangements for further negotiations.

President Nixon, in March 1971, demonstrated his continuing interest in the political status deliberations by appointing a personal representative, with the rank of ambassador, to carry on further talks with Micronesian officials. A negotiating team headed by the Ambassador met with a Micronesian status delegation in Maui, Hawaii in October 1971. In addition to reaching preliminary agreement on a number of basic issues, the Maui deliberations resulted in more clearly defined positions on both sides, and a fuller mutual understanding.

A fourth round of status talks was held in Micronesia in the spring of 1972 to focus in greater depth upon the economic, social and security factors involved in a changed status agreement.

Guam

Guam, so the Guamanians will tell you, is "where America's day begins." It is the westernmost territory of the United States, official reports state. It is also in the approximate longitude of Japan, and therefore in the Far East. But whether Guam is east or west, it is unquestionably in the vicinity of where the sun first comes up each day over Mother Earth—and indisputably 6,000 miles southwest of San Francisco.

The most populous and largest of the Mariana Islands chain, Guam was ceded to the U.S. by Spain in 1898, following the Spanish-American War. It is 30 miles long and four to eight miles in width, making it one of the largest land masses within Micronesia where most of the islands are tiny cays, so small as to be unpopulated, so incidental to man that they remain uncharted on most maps.

Guam, however, has always had strategic importance. One of the focal points of Japanese air and sea battle missions during World War II, some traces of that intrusion still remain. In January 1972, a Japanese guerilla was found wandering in a remote region, unaware that his country had surrendered more than a quarter-century earlier.

Since World War II, Guam has served as an important U.S. military base. Until a few years ago, it had a somnolent civilian economy secondary to the military-related economy. Even now two-fifths of the island's population are still military personnel.

Two destructive typhoons which devastated Guam in 1962 and 1963 necessitated almost complete rehabilitation of the island. This rebuilding set in motion a chain of events which has changed Guam from a remote tropical island into a bustling commercial and communication center of the Western Pacific.

Since 1969, a series of major political, social and economic changes have dramatically changed the life of Guam. Private capital in the millions is contributing to the island's economic growth, although military spending continues to help the economy. Guam is a free port and, as such, provides incentive for the development of business, industry and commerce. Modern developments have made Guam the communication hub of the Western Pacific and several major airlines provide daily international air service to and from the island.

The opening of the island to tourism, and major steps toward internal self-government, have focused the attention of investors, American and foreign, on the island. Guam's economic development is proceeding at a rapid pace with tourism today as the number one industry. In 1971 over 75,000 visitors came to Guam, and a projected total of 275,000 visitors a year, with 90 percent being tourists, is expected by 1975. This phenomenal expansion in the tourist business has created a boom in the construction of hotels and related facilities to service the visitors.

In 1970, for the first time in their history, Guamanians went to the polls to elect their own governor and lieutenant-governor. Guam's first Governor is Carlos Camacho and its first lieutenant-governor is Kurt Moylan, both Republicans.

Guam has had its own elective unicameral legislature since 1950, when the U.S. Congress voted an Organic Act of Guam. A U.S. District Judge appointed by the President has jurisdiction over all cases arising

Points of entrance and departure—by air or by sea—in Guam where America's day begins.

under Guamanian laws, but there is also an Island Court, a Police Court, a Juvenile Court, and a Traffic Court. Guamanians are citizens of the United States, although they do not vote in national elections, nor have they had voting representation in the U.S. Congress. Provision for a non-voting delegate to Congress was enacted by Congress in 1972.

With the extensive degree of local self-government now enjoyed by the Government of Guam, its reliance upon the Department of the Interior is declining, and the Guamanian officials are increasingly entering into direct negotiations with other Federal agencies for special services, particularly housing, education and health. Education is emphasized. School attendance is compulsory, the University of Guam is accredited as a four-year degree-granting institution, and it also offers graduate studies in education.

Interior's role in Guam today has evolved into one of providing liaison and advisory services to the Governor and support to the Comptroller who is an appointee of the Secretary of the Interior. Guam, like Samoa, and the Virgin Islands, is an area in transition.

American Samoa

American Samoa is situated in what author Eugene Burdick calls "the blue of Capricorn"—in the vicinity of the Tropic of Capricorn, where refracted light gives both water and sky the rare, undiluted blue that is the illusionary trademark of the South Pacific.

The lifeway of the people of Samoa—like that of their Polynesian and Maori cousins scattered throughout the Pacific islands—seemingly is the result of an environment so beauteous and non-demanding that the people are free of concepts of time, competitiveness, and similar constraints upon most of mankind.

Fa's Samoa—the old way—endures there. Samoans still live for the most part in a communal family economy which, extending through generations, may include hundreds or even thousands of people. In American Samoa, which is made up of a group of seven islands, environmental controls upon development and programs to preserve cultural tradition are significant features of the United States administration under the present Governor.

Acquisition of American Samoa came about at the turn of the last Century. It was the culmination of early talks and tentative agreements between the United States and the High Chief of Pago Pago, followed by a convention with Great Britain and Germany in 1899 which parceled out each country's protectorate claims, and, finally, negotiations and deeds of cession with the chiefs of Tutuila and Aanu'u, and Manu'a.

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> ***. . . the people are free of concepts of time, competitiveness, and similar constraints upon most of mankind . . .***
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Over the years, the Navy built and maintained public works and medical facilities, but the agreements provided that Samoan chiefs would continue to govern so long as they did not violate U.S. laws. The Navy government continued until 1951, when administration of American Samoa was transferred to the Department of the Interior by Executive Order, with a view to promoting civil development of resources and increasing social services to the people.

The American Samoan island group has been described as potentially an ideal system of ecological management. Most of the islands remain nearly as they have for centuries. The population has grown from an estimated 6,000 to 28,000 today.

Economically, the territory is steadily progressing and an increasing number of smaller industries are interested in establishing branch operations there. The transition from a subsistence economy to a dollar economy has been gaining momentum during the past two years.

Education in the islands has continued to improve, and 1971 witnessed the development of a Community College and the accomplishment of pre-school education for some 3,000 children between the ages of three and one-half and six. The laws of the territory require compulsory education. Although English is the official language, practically all documentation is prepared in both English and the Samoan language.

Most of the Pago Pago harbor area now has modern sewage disposal service. Water reservoirs and additional water sources are under development as are good roads to the north side of the principal island of Tutuila. The major construction projects of the present Administration are concentrated on potable water, adequate sewage disposal and good roads.

Increased air traffic to American Samoa is boosting the influx of tourist dollars, and this has increased the demand for accommodations.

Planning is now under way for the building of additional hotel space. Plans for improvement of the airport facilities have been completed and actual construction is imminent. The runway itself is adequate for the heaviest of aircraft.

The approaching of self-government is becoming increasingly evident, and has been supported by the Department of the Interior, consistent with the wishes of the local people. For the past two years the Legislature has participated fully in the preparation of the annual budgets. The revised constitution of the territory provides that locally derived revenues must be appropriated by the Legislature so as to be available to the Government of American Samoa for expenditure.

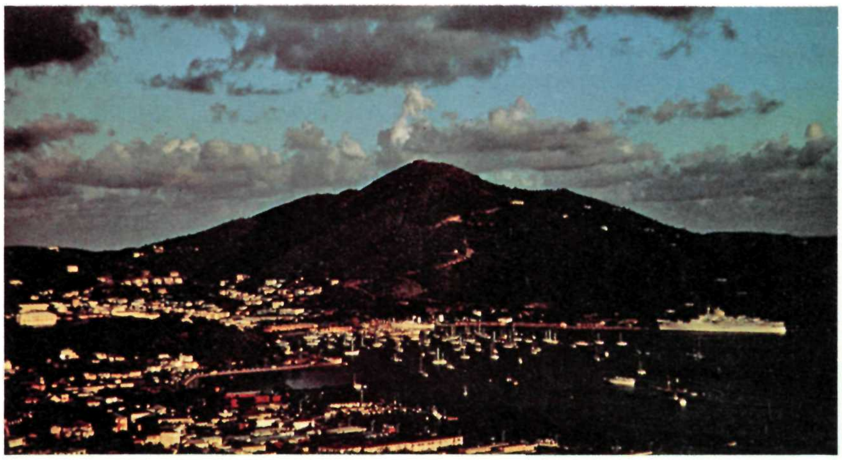
Congressional grants constitute a sizeable portion of the operating budget of the American Samoan government, and the Government of American Samoa is the largest employer in the territory. However, the establishment of Economic Development and Planning Office in 1970, financed in part by the U.S. Office of Economic Opportunity, augurs the start of systematic development of tourism, concerted effort to attract industry, and the development of marine resources.

The Governor and Lieutenant Governor are appointed by the Secretary of the Interior. However, the islands have an elective legislature and have recently installed an "observer" in Washington to strengthen links with the United States Congress.

Virgin Islands

About a thousand nautical miles southeast of Miami lie the islands of the U.S. Virgins group—chief among which are St. Thomas, with its booming free port of Charlotte Amalie; St. Croix, haven for the world-weary

Samoan sunsets have long attracted visitors from many parts of the world. American Samoa's people live in a relaxed, unfettered atmosphere.



but luxury-loving; and St. John, largely taken up by the Virgin Islands National Park, maintained with care for preserving natural beauty but also with a view to the needs of the camp-oriented and budget-conscious average American family.

Columbus discovered the island chain, which is part of the Antilles forming the dividing line between the Caribbean Sea and the Atlantic Ocean. For a few decades the native Caribe Indians fended off attempted European colonization, but by the early 17th century, Spain, England, France, the Netherlands and Denmark had established strongholds in the West Indies. The islands under the U.S. flag were purchased from Denmark in 1917—by that time a comfortable, placid island out-post, although once blighted by slavery and periodically terrorized by pirates.

An enlightened Danish parliament in 1848 abolished slavery in its islands—fifteen years earlier than our own Emancipation Proclamation. What the U.S. purchased was a scenic terrain, a governmental structure with a fairly sound, trade-oriented economy, a population consisting primarily of black descendants of slaves, numerous well-to-do Danes, and a segment of Spanish-speaking people. (Virtually no traces of Caribes remained in the Virgin Islands after Spanish incursions in the 16th and 17th centuries.)

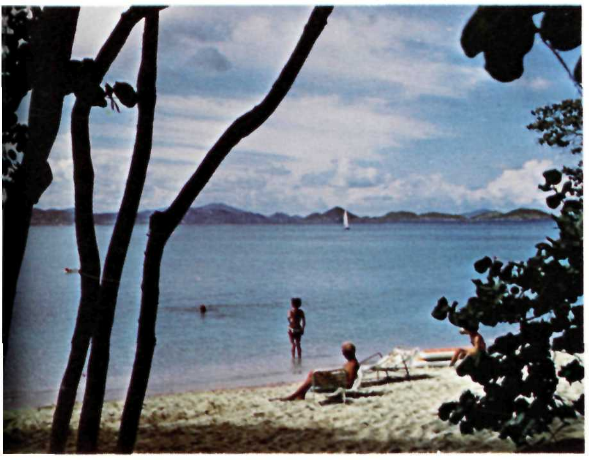
The course of Virgin Islands under the U.S. flag has been one of evolution—to more modernized uses of the land, higher levels of general education, greater emphasis upon tourism and a tourist economy, and increasing steps toward local self-determination.

First administered by the Navy, the Virgin Islands were moved to Interior administration in 1931, and the first civilian Governor was appointed by the President. For a number of years, the Virgin Islands governmental structure has been composed of three branches—an elected legislature, a judiciary system, and an executive branch. In November 1970 the Virgin Islanders held their first gubernatorial election, in which over 90 percent of the eligible voters took part. Melvin H. Evans, a Republican, was elected. In 1972, Congressional legislation gave the Virgin Islands a non-voting delegate seat in the House of Representatives.

No longer is the Interior Department the sole agency concerned with the development of the Virgin Islands, although it retains certain statutory responsibilities through the general supervision of the U.S. Comptroller and the administration of matching funds. Some of the annual Virgin Islands budget comes from revenues, and some comes in grants and loans from U.S. government agencies, for such activities as education, housing, transportation development and health services.

With an economy largely dependent upon tourism, the Virgin Islands Government recently opened tourist bureaus in Washington, D.C., Los Angeles, and Canada. At the same time, it is attempting to attract new industry to the islands. The chief industries at present are an oil refinery, an aluminum production plant, wristwatch assembly operations, and some ready-to-wear textile manufacturing.

Tax exemptions and subsidy benefits are used by the local government to encourage industrial development. Moreover, manufacturers of goods of foreign origin, to which 50 percent or more value has been added in the



Booming Charlotte Amalie (far left and right), Christiansted harbor on St. Croix and the simple life on St. John.

U.S. Virgin Islands, are allowed duty-free entry of their products into the United States.

Unfortunately, the exquisite scenery and sunny climate (the islands are hilly, sloping to sand beaches and excellent natural harbors) do not alone make up the ingredients for self-sufficiency. The Virgin Islands have no underground or surface fresh water sources. For centuries, drinking water had been captured in hillside troughs from the occasional, seasonal rainfall. Even today, rooftop catchments serve as water troughs. Food—vegetables, dairy products, fruits, meat and condiments—must all be imported. Consequently, the cost of living, despite the gentle climate, is high—higher than in urban America, for example.

Four water desalting plants are in operation to produce potable water from the sea. Three are located on St. Thomas, and one is on St. Croix. Construction of two additional desalinization plants will begin in 1972.

Health services and programs, aided by the U.S. Public Health Service, make the Virgin Islands Government a leader in the Caribbean in preventive and curative medicine.

Illiteracy is virtually non-existent, with 20,000 children (nearly one-third the entire population) currently attending elementary or secondary schools. In addition, the College of the Virgin Islands, which graduated its first class in 1970, has an enrollment of more than 500 students.

Housing needs, estimated to be 1,000 additional units per year, are being met in part through agreements with the U.S. Department of Housing and Urban Development, which provides aid for low-cost rental housing. Sewage and waste disposal systems are also part of the total community development plan, and Federal aid has helped enable the islands government to keep the communities apace with needs arising from millions of tourists.

Highlights of Virgin Islands government activity during a recent typical year illustrate the extent to which the islands are synchronizing with modern-day social and economic trends. Several schools were marked for expansion, a multi-million-dollar bond issue was voted for a water and power authority, narcotics control measures were sharply increased, highway lighting and road-building received priority attention, a consumer protection council was created, and improved systems were installed for collecting taxes and for upgrading careers in the civil service.

The economic development of the Virgin Islands has led to some problems as well as benefits. With the highest standard of living in the Caribbean, these islands have attracted thousands of people from other Caribbean places, many of whom have entered illegally in search of employment. Following a census in 1970, the Virgin Islands Government deported about 8,000 persons, but it is believed that many others still remain undetected. Another problem has to do with the influx of tourists in such growing numbers that new or improved jet landing facilities are under consideration.

These recent trends make it evident that the U.S. Virgin Islands, developing rapidly on the economic front, are becoming conscious of the need to plan systematically for the future.

Photos above by James Blair © 1971 National Geographic Society

Technology can complement wildlife—with careful planning. But how, and how far, can we go down this road without great regret?

With Us On Earth

The survival of wildlife in a fast-changing world serves as a barometer of the health of man.

If wild creatures can thrive in their native habitat, it is a good bet that humankind will find its environment livable too.

But if the earth and air and waters are fouled—if nature's wetlands, so incredibly productive of life, are filled to create artificial drylands for short-range convenience or profit—if exploiters carelessly destroy habitat and overdraw on nature's credit—then man himself may be in deep trouble.

This utilitarian argument for conservation of fish and wildlife, and for protection of the areas they need for living, is one of several that people are coming to accept. Here is another: Man is at the top of the food chain; thanks to nature's complex systems, virtually every wild species on earth serves human needs in some direct or indirect way. From the smallest plankton to the biggest whale, natural systems attempt to maintain a balance that supplies both man and domestic animals with some desired or needed substance. Even the irksome mosquitoes in the Everglades serve as food for the little fish which, in turn, are fed upon by bigger fish we want for food and sport—not to mention the magnificently profuse bird life that feeds upon them all.

Research scientists may yet find keys to human survival if we can maintain and preserve on earth its present diverse forms of life. The genes and tissues of the humblest and most obscure being could one day yield up secrets as yet unimaginable to the most inspired biochemist of the 1970's.

These are rational arguments. They appeal to a sense of enlightened self-interest. And there are other arguments that speak even more eloquently to the human heart.

Secretary of the Interior Morton, addressing the National Audubon Society in Milwaukee in May 1971, put his own feelings into words that included these:

"Some twenty years ago I moved with my family to a farm near the Chesapeake Bay, one of nature's great gifts.

"The beating of wild wings as a flock of ducks and geese rise suddenly in the quiet dawn is, to me, one of the most beautiful and exciting sounds man can ever be privileged to hear . . .

"A land without wild things upon it is a sterile, perhaps even a dying land. A farm must be more than a corn-and-beef factory: it must support quail and pheasants, rabbits and foxes. A park must be more than a picnic spot or camping area: it must have squirrels and pigeons, or bear and elk. A refuge must be more than a waterfowl area: it must have muskrats and raccoons and a whole community of other living things or it fails to live up to its potential for existence."

The Department of the Interior maintains nearly 30 million acres set aside permanently in the National Wildlife Refuge System, administered by the Fish and Wildlife Service. Millions of additional acres on private farmlands are maintained for their "pothole" value, as breeding grounds for wild migratory waterfowl. Virtually all of the National Parks are dedicated to the maintenance of native species. Wilderness and "primitive" areas on other Federal lands give sanctuary. Still, the struggle to preserve our wildlife goes on, and the outcome is in doubt.

Rescuing the Rest

In the short history of our country, 47 wildlife species have been driven over the brink of extinction. More than 120 species have disappeared throughout the world since 1600 A.D. Today hundreds of others face a similar fate.

The Fish and Wildlife Service has driven hard to preserve the last options for some species. With the cooperation of Canada, it has worked to protect whooping cranes and

At mankind's mercy: Whooping Cranes, California Condor, Finback Whale, Key deer. Chief enemy: eviction as men build roads, strip hills, drain wetlands, pollute waters—producing sterile scenes such as this subdivision.

wolves. With the cooperation of State agencies, it has studied and transplanted masked quail, blackfooted ferrets and Aleutian geese. With the cooperation of other Federal land agencies, it has worked for California condors, antelope and other species. Its Patuxent Wildlife Research Laboratory in Maryland has been the nerve center of studies for all agencies concerned with endangered species.

The Fish and Wildlife Service with an assist from the National Park Service has sharply reduced alligator poaching in the deep south. An order by the Secretary of the Interior has employed the amended Endangered Species Act to cut off imports of eight species of endangered great whales. Now the import controls are being extended to help foreign nations maintain the survival of eight great cat species that are hunted for their skins. New legislation is before Congress which would give the Secretary of the Interior even greater authority to act on behalf of endangered wildlife.

But control of over-exploitation of animals is only the most obvious, and perhaps the easiest, of the many responses needed. The gravest threats, increasingly, come from man's alteration of the environment. As marshes are filled, and streams are channeled into sterile canals, and woods are cut to build suburbs, animals will disappear. Polluted waters will kill off our finest fish species and disrupt complex food chains supporting other forms of life. In the end, perhaps only zoo specimens and stuffed museum displays will remind us of our once-great wildlife heritage.

Only about 50 Florida Key deer remained in existence in 1947. A wildlife refuge, and heroic work by countless persons, restored the population above the recognized danger point. And now—more Key deer are being killed on nearby highways each year than the total number in existence only a generation ago. The automobile indeed, coupled with highway destruction of habitat, may have become wildlife's natural enemy to a degree no predatory beast—including man, the hunter—ever succeeded in becoming.

Some of man's changes have been beneficial to wildlife. By cutting the forests, he unintentionally created better deer habitat. Now deer populations in most of the United States are believed by many authorities to be higher than when the first Europeans landed here. Yet the rate at which land, rivers, estuaries and coasts are being destroyed or altered can only forebode disaster for all wild creatures.

The Endangered Species program has funds for land acquisition, but not enough to begin to match the zooming price of land.

Interior's efforts can be little more than a holding action until our society comes to feel that other creatures' claim to existence is no less valid than our own.

Eagles: Our Dying Emblem?

The slaughter of eagles in Wyoming, disclosed in 1971, brought increasing public attention to the plight of America's national bird. Many scientists believe that pesticides, suspected of causing eggshell thinning, are the primary peril to the species, but loss of habitat and direct destruction by man through shooting and poisoning, even electrocution by powerlines, also have contributed.

Population estimates of eagles are hard to come by, but perhaps there are 12,000 to 15,000 golden eagles and 2,000 to 3,000 bald eagles in the United States, excluding Alaska. Only about 300 members of the southern race of bald eagles are believed to remain, and this species is on the endangered list.

Although population estimates vary, there is no disagreement on one thing: the figures are going down.

Congress became concerned with the possible extinction of the bald eagle as early as 1940. The Bald Eagle Act of that year forbade the taking or selling of bald eagles or their feathers except under special permit. It provided for fines of not more than $500 and imprisonment of not more than six months, or both. The preamble to the legislation proclaimed the bald eagle "no longer a mere bird of biological interest but a symbol of the American ideals of freedom."

The Bald Eagle Act was amended to include golden eagles in 1962, but livestock interests, fearing heavy losses of young lambs, succeeded in obtaining important exceptions.

The statute authorized the Secretary of the Interior to issue permits for the taking of golden eagles to protect wildlife or agriculture. From 1963 to 1968, the Governors of Texas, Wyoming, New Mexico, and Montana annually requested and were granted permission for the golden eagles to be taken in certain counties. Similar permission was granted to Colorado in 1963 and South Dakota in 1964.

By 1969, the Department's policy was becoming more restrictive. A Solicitor's Opinion of April 23 stated that the "Secretary is required to inquire into place and time regarding taking" and interpreted the Act as addressed to "serious eagle predation which resulted in economic hardship to limited areas, and not simply normal predation . . ."

The Secretary formally halted the issuance of "blanket" permits (issued usually for counties within a State) in March 1970, although none had been granted for more than a year. Requests from Wyoming, Montana, Idaho, and Texas were rejected. Permits still may be issued to individual ranchers upon proof of predation, but none, in fact, have been issued since 1969.

The Wyoming killings became national news in May 1971 with the discovery in Jackson Canyon of more than 20 eagles that autopsies at Patuxent Wildlife Research Center and the University of Wyoming indicated had been poisoned by thallium—a deadly chemical not used in the Fish and Wildlife Service's predator control programs since 1967.

An investigation conducted by the Service's game management agents in cooperation with State officials resulted in a $674 fine, on State charges, being paid by the rancher involved.

In the meantime, rumors persisted that hundreds of bald and golden eagles had been shot from aircraft in Wyoming. Pilot James Vogan broke the story publicly in testimony on Capitol Hill, in return for immunity from Federal prosecution. Evidence gathered by game management agents confirmed the occurrence of a mass eagle slaughter, and prosecutions were begun on December 14, 1971.

Congress meanwhile, with enthusiastic support from Interior, was considering legislation that would increase penalties under the Bald Eagle Act.

The Fish and Wildlife Service has other programs devoted to the preservation of the country's eagle population.

Patuxent Wildlife Research Center is studying pesticides and has developed facilities where propagation of the northern and southern races is underway. Eight national wildlife refuges in the southeastern United States have bald eagles nesting on them.

The Service also is conducting an inventory of remaining eagle nesting sites to determine which ones would be suitable for acquisition as national wildlife refuges, using funds provided by the National Wildlife Federation.

Two locations appear as leading possibilities: an area below Fort Randall Dam in South Dakota which attracts up to 200 bald eagles in the winter, and another area below Keokuk Dam on the Mississippi River near Hamilton, Illinois, which provides habitat for 75 to 100 bald eagles.

Bald Eagles, once plentiful on the American scene, are becoming more rare each year with man's increasing encroachment on the environment.

The Atlantic Salmon, dynamo of the piscatorial world, has struggled against heavy odds for survival. Its major feeding area was found in 1961 by commercial fishermen; it is hoped timely State, Federal and international action will prevent extinction.

Atlantic Salmon: Fighting Back

Atlantic Salmon, which are among the world's most highly prized fish, have so far survived many environmental menaces. Damming of rivers became a problem as far back as the early 1800's; pollution has been an increasing threat with the growth of industrialization. Many persons now believe a new problem could have severe results: overfishing on the high seas.

The discovery in 1961 of a major Atlantic salmon feeding area off Greenland led the commercial fishermen of Denmark and other countries to this productive area. Their catch increased until 1969 when the International Commission North Atlantic Fisheries (ICNAF) agreed to put a ceiling on the high seas take at the 1969 level.

Commercial and sport catches, however, have continued to fall off dramatically near North American rivers where the salmon return to spawn. In the United States, only seven rivers in Maine now have Atlantic salmon fishing. Sportsmen are upset, fearing the 1969 measures may not be enough. They organized a private pressure group three years ago—the Committee for the Atlantic Salmon Emergency. Ted Williams, Curt Gowdy, Lee Wulff, and Bing Crosby are members.

On December 28, 1971, President Nixon signed into law legislation that amended the Fisherman's Protective Act of 1967 by giving the President discretionary authority to prohibit the importation of fishery products from nations "which conduct fishing operations in a manner that diminishes the effectiveness of international fishery conservation programs."

A breakthrough came in February 1972, when the State Department announced an agreement with Denmark on curtailing the salmon fishery off West Greenland. Danish flag vessels will gradually phase out their high-seas fishery of Atlantic salmon, with the final stage in 1975. In addition, the inshore salmon catch by local Greenland fishermen will be "stabilized" while looking to their special interests and the impact on Greenland's economy.

Agreements came following talks between officials of the two nations, with the American delegation including representatives of the Interior and Commerce Departments and headed by the State Department. Interior's chief representative was Nathaniel P. Reed, Assistant Secretary for Fish and Wildlife and Parks. Consultation also has been taking place with other concerned governments, including Canada and Norway.

Denmark and the United States agreed to seek incorporation of the essentials of their agreement into the conservation regulations of ICNAF at that organization's annual meeting in May. ICNAF had already adopted a ban on high seas salmon fishing effective for 12 nations, plus other interim measures.

Both the United States and Denmark agreed to cooperate in future measures to conserve Atlantic salmon and to meet in the future at the request of either government to review the status of salmon stocks. For its part, the United States agreed to seek to ensure that further appropriate conservation measures are taken within North American inshore waters. Canada and the U.S. had already pledged, late in December 1971, to cooperate closely on conservation of this magnificent species.

U.S. commercial fishing for Atlantic salmon ceased years ago. In April 1972, Canada imposed a ban against commercial catches by Canadians along much of its East Coast, probably for at least six years.

Federal and State hatcheries in our country are producing Atlantic salmon, and the effort guarantees that the species will not become threatened with extinction.

The Fish and Wildlife Service's Craig Brook Hatchery at East Orland, Maine, is devoted entirely to producing Atlantic salmon, most of which go into the Penobscot River. A few additional salmon are produced at Service hatcheries at Pittsford, Vermont, and Berlin, New Hampshire, for the Connecticut River. There are State-owned hatcheries in Massachusetts, Connecticut, and New Hampshire, and the Service has construction funds for the Green Lake Atlantic salmon hatchery near Ellsworth, Maine, scheduled to begin operation (600,000 smolts annually) by fall 1973.

The Service's role in the Atlantic salmon controversy may become more important if it can obtain representation on the International Commission North Atlantic Fisheries. Assistant Secretary Reed has made this recommendation to the State Department.

Craig Brook Fish Hatchery, East Orland, Maine, is devoted to producing Atlantic Salmon.

The Silent Killers

The Fish and Wildlife Service years ago did much to document the effects of pesticides on wildlife. It continues to compile proof of what pesticides and other environmental pollutants are doing today. Good hard data, plus a massive amount of circumstantial evidence, show that numerous species are drastically declining due directly or indirectly to pesticide poisoning.

The bald eagle, peregrine falcon and brown pelican are a few of some 40 species in serious trouble, perhaps even facing extinction. Many other species also probably are being harmed.

In the marine environment, certain fishes, crustaceans, mollusks and other invertebrates are drastically affected by pesticides. Eminent scientists, such as Jacques Cousteau and Barry Commoner, feel the quantity of life in the oceans has been reduced by as much as *40 percent* over the last 30 years. If so, pesticides doubtless have played a large part. For most marine life originates in fresh or mixed fresh-and-salt waters near our shores, where chemical runoff accumulates and concentrates.

The most controversial of all pesticides, DDT, is still used across the world. Dieldrin, endrin, mercury and many other compounds are everyhere. Pro-pesticide interests say the choice is either "pelicans or people." Other authorities say that while pesticides are essential to feeding the billions of people, especially in developing nations, it is possible to have both pelicans *and* people, in a healthier environment.

Pesticides save millions from disease—but mosquito abatement in this country has become very largely ineffective due to the insect's rapid ability to become resistant to every modern compound. Several people died in 1971 in California from a mosquito-borne form of sleeping sickness.

Just prior to World War II and immediately after, agriculture management practices were designed to reduce insect losses in crops. At this point the "miracle" insecticides came along, so other ways to limit crop damage were ignored.

Today some large farms have gotten away from using insecticides, relying instead upon combinations of various crop management methods and biological control, using the natural predators of insect pests, and sterilization of the insects themselves. In some cases, small amounts of chemicals are still used to control the last 10 to 15 percent of the harmful insects left. This method has been called integrated control; it holds great promise of becoming the pattern of the future, but wide acceptance has not yet arrived.

After many years of study, a significant number of wildlife scientists have a feel of impending disaster. The disappearance of some species can be directly traced to environmental pollutants, but other species show only subtle effects, detectable only to trained eyes and by long observation of creatures in the wild. Such compounds strike the nervous system and affect behavior. A small change in animal behavior can spell the difference between parents successfully raising their young or losing the ability to continue the species. Scientists find these effects difficult to document, yet know they are there.

So the Fish and Wildlife Service continues monitoring pollutants in the environment and studying their impact on fish and wildlife primarily. They are stepping up research efforts to learn more about the effects of heavy metals and PCB's (plasticizers used in numerous industrial processes.) But there are 10,000 registered pesticides, of which 200 to 300 are applied in such a way as to become environmental contaminants and numerous other compounds enter the ecosystem.

Limited resources allow the Service only to concentrate on the few compounds that seem to be the greatest threat.

This research will have little value unless the sources of the pollutants are eliminated or reduced. Already, the Fish and Wildlife Service has had the unpleasant duty of monitoring some species and some streams and lakes, right down the rathole. The few gains in control have been offset by an increased volume of contaminants added to the environment.

One battle-scarred veteran of the struggle put it this way: "Environmental matters must be given equal weight with economic gain. Otherwise, we may end up monitoring life out of existence."

All Is Not Lost

Still, there are encouraging signs, including a growing public outcry. The National Environmental Policy Act of 1969 is making its influence felt.

President Nixon has given leadership to the battle to save our endangered species, proposing in February 1971, legislation to provide for early identification and protection of those species threatened with extinction. Details of this proposal are given in the "Laws for a Changing Land" section of this Yearbook.

The President also noted early this year that the protection of migratory species, besides preserving wildlife values, exemplifies cooperative environmental effort among the United States, Canada and Mexico. In March 1972, the U.S. and Mexico signed an amendment to a 1936 wildlife agreement, providing for protection of 32 additional "families" of birds—including eagles, hawks, falcons, owls, and many of the most attractive species of wading birds.

Another positive indicator is the response of State, private and Federal organizations—one of which is Interior's Bureau of Land Management, which manages hundreds of millions of acres in the West and Alaska, enabling it to fill a key role in species survival.

Progress was achieved in 1971 for the preservation of golden and bald eagles, Alvord and Bonneville cutthroat trout, the Mexican duck, the desert salamander and desert pupfish.

BLM established the Snake River Birds of Prey Natural Area in Idaho, a 26,255 acre sanctuary which experts declare is a one-of-a-kind desert, river, and cliff complex designed by nature to aid the survival of such birds of prey as the golden eagle, peregrine falcon, and prairie falcon.

A census of eagle and hawk mortality by BLM districts has isolated the electrocution problem to one of power distribution lines, not transmission lines. Some modification of the offending distribution poles which cause the electrocution of raptors, particularly golden and bald eagles, is being undertaken by utility companies as a result of the BLM survey.

In cooperation with the Oregon Game Commission, BLM has helped transplant Alvord trout, an endangered fish which occurs only in the Vale, Oregon, District. Gap fences have been constructed to restrict livestock trampling of the stream banks, and other stream and habitat improvements are now scheduled.

Eagles and falcons are among species threatened by pesticides and other environmental pollutants.

With the Nevada Department of Fish and Game, BLM is working to preserve a newly discovered subspecies of Bonneville cutthroat trout previously believed extinct. The Bureau has closed two streams to fish migration by various stream and habitat improvement devices, and State wildlife officers have prohibited fishing in an effort to build the species up to reasonable numbers for transplanting.

In past years, BLM financed a study of the habitat for endangered Mexican duck in New Mexico, one of only two states in our nation where the species is known to exist. Now BLM has improved the Mexican duck habitat as a result of the study and is operating the area under a wildlife habitat management plan. An increased flock for breeding is the ultimate objective.

BLM is trying to protect the fraction of an acre of high desert that shelters the only known habitat of a newly discovered species of salamander, perhaps one of the most amazing biological finds of this century. The Bureau hopes to exchange land with the private landowner in California, on whose property the new salamander species was found by a State game warden investigating a tiny seep of moisture through a limestone sheet at the base of a cliff.

By exercising its control on public land leasing procedures, BLM was instrumental in limiting the removal of water for irrigation from the habitat of endangered desert pupfish. Survivors of the ice age, the pupfish are found only in a few small springs in Nevada and California. BLM is one of several Federal agencies cooperating with the Fish and Wildlife Service in a continuing Interior Department effort to save the pupfish from extinction.

Predatory Animal Control

Since Biblical times man has been confronted with the problem of predatory animals preying on domestic livestock and in some instances endangering human life. In the United States the problem arose with the first settlements. The first bounty law was passed by the Colonial lawmakers of Massachusetts in 1630. Neither this nor other similar laws since have solved the problem.

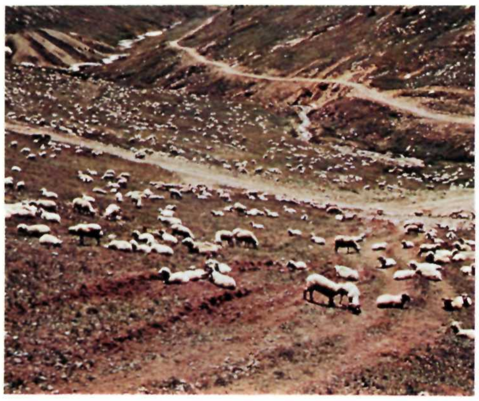
In 1915, following an appropriation of $125,000 by the Congress, the Bureau of Biological Survey entered directly into predator control activities. It was felt that livestock, grazing on Federal lands, should be protected from predators. Sheep ranchers were the chief beneficiaries of the program and they remain so today. The program grew to the level of about $8 million per year, about 50 percent of it contributed funds from States, counties, livestock associations and others who directly benefit.

The Fish and Wildlife Service (Bureau of Sport Fisheries and Wildlife) conducted the program as required by law, using such methods as poisoning, shooting, trapping, and denning to kill over 100,000 predators annually, about 75,000 of which were coyotes.

Growing concern has been expressed by conservationists, scientists, and the general public about the effects of the program on wildlife and the environment in general.

An Advisory Committee on Predator Control, jointly commissioned by Secretary Morton and Chairman Russell E. Train of the Council on Environmental Quality, made an in-depth study of the problem and made a number of recommendations for changes in the current program.

Composed of seven independent experts, the Advisory Committee recommended stopping the use of poisons for control of predatory wildlife. It cited evidence that poisons aimed at predators "have been introduced to millions of acres of range and forest lands on a largely speculative basis." Finding little solid information about actual losses of livestock to predators, the Advisory Committee said there was evidence, however, that many "non-target" animals beneficial and necessary to natural ecosystems were being destroyed.



Growing concern has been expressed about the effects of Predator Control Program designed to protect livestock.

The Administration responded swiftly. President Nixon, in his February 1972 Environmental Message, noted the importance of predators in maintaining a natural balance in the environmental web of life.

"Certainly, predators can represent a threat to sheep and some other domesticated animals," the President said. "But we must use more selective methods of control that will preserve ecological values while continuing to protect livestock."

By Executive Order issued at the same time, President Nixon directed a halt to the use of poisons for killing predators on Federal lands. He extended the ban to toxic chemicals with secondary poisoning effects—poisons aimed at the prey of predators, such as rodents, birds and other creatures, whose carcasses could contain dangerous residues. Exceptions are permitted only in emergencies, upon documented evidence that human welfare, valuable natural resources or endangered wildlife species are menaced.

The following day, Secretary Morton announced that Interior had stopped formulating, distributing or using poisons, and said that baits already in the field were being retrieved as quickly as possible. Trapping, shooting, and denning would continue, the Secretary said, to protect crops and livestock in States whose laws permit such practices.

But in addition, Secretary Morton proposed legislation to Congress to halt direct Federal participation in predator control activity; provide for intensified research for safer control methods; and set up a three-year phased period for the States to take over responsibility for animal damage control. Federal aid would end after three years following passage of such legislation.

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> ***. . . Thus began a new chapter in the long annals of America's efforts to come to terms with its wildlife, and with its own conscience.***
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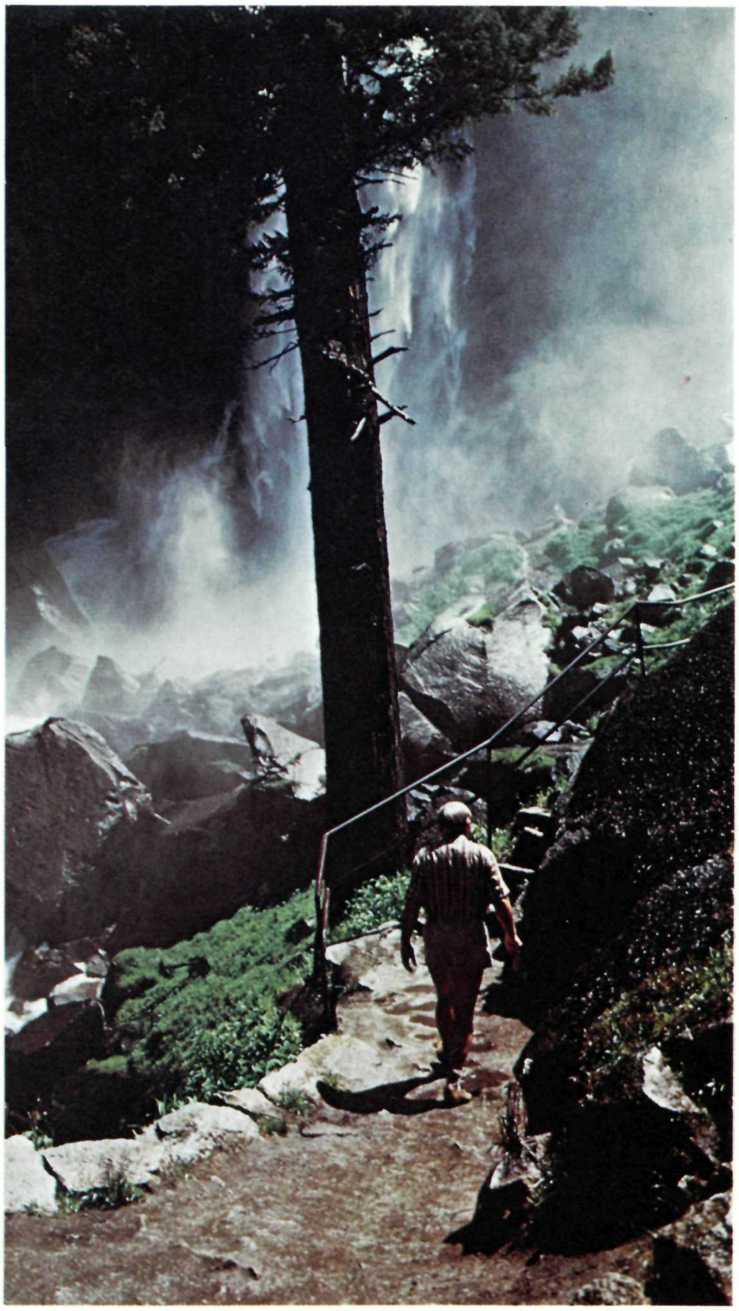
Thus began a new chapter in the long annals of America's efforts to come to terms with its wildlife, and with its own conscience.

The predator-control aspects of this internal struggle symbolize a deeper and keener public understanding of the problem. But the larger question remains unanswered: what are we willing to forego to ensure that our once-abundant wildlife will have ample place in our land, to grace the lives of our children, and their children as well?



Tall buildings have an appropriate place in American life, but as our Nation expands, more thought should be given to saving the natural scene for trails and other outdoor recreation needs. Below is Thomas Moran, famed artist, looking over a portion of what became Yellowstone National Park. He must have wondered if it would be saved. The Act of March 1, 1872, saved Yellowstone for future generations.

Saving the Scene

The United States is now nearly 200 years old. A productive, bountiful land, its technological and manufacturing genius are known throughout the world.

But, in recent years, it also has become greatly concerned about its environment. It has recognized a growing need to improve cities, soften adverse impacts of economic expansion, reduce pollution, and provide more park and recreation opportunities.

The Department of the Interior, vitally involved in saving the American scene, works through many programs and cooperates with other Federal agencies, States, cities, counties, and the private sector to enhance the environment.

Most Americans cherish their outdoor heritage. As more people concentrate into urban and suburban areas, they need a greater opportunity for outdoor recreation near their homes and jobs. They want clean air and water, quiet, a chance to observe birds and animals living free and untamed.

In an age when one-fifth of our people take up new homes every year, a sense of identity and continuity becomes crucial. Thus, our natural heritage is increasingly important—as is an appreciation of our unique history of freedom in a still young and self-renewing land.

To preserve, and where necessary to restore, this legacy is one of Interior's prime missions in serving the American people.

Protecting Our Roots

It was an era of accomplishment—and exploitation. A continent was tamed, its resources exploited by active, pragmatic men following visions of personal and national greatness. Yet it was during this time of national adolescence, when natural resources were squandered in the rush for development, that an idea—uniquely American—found life and form. This idea, over the last one hundred years, has given this nation and the world the hope that man may yet learn to live in harmony with nature.

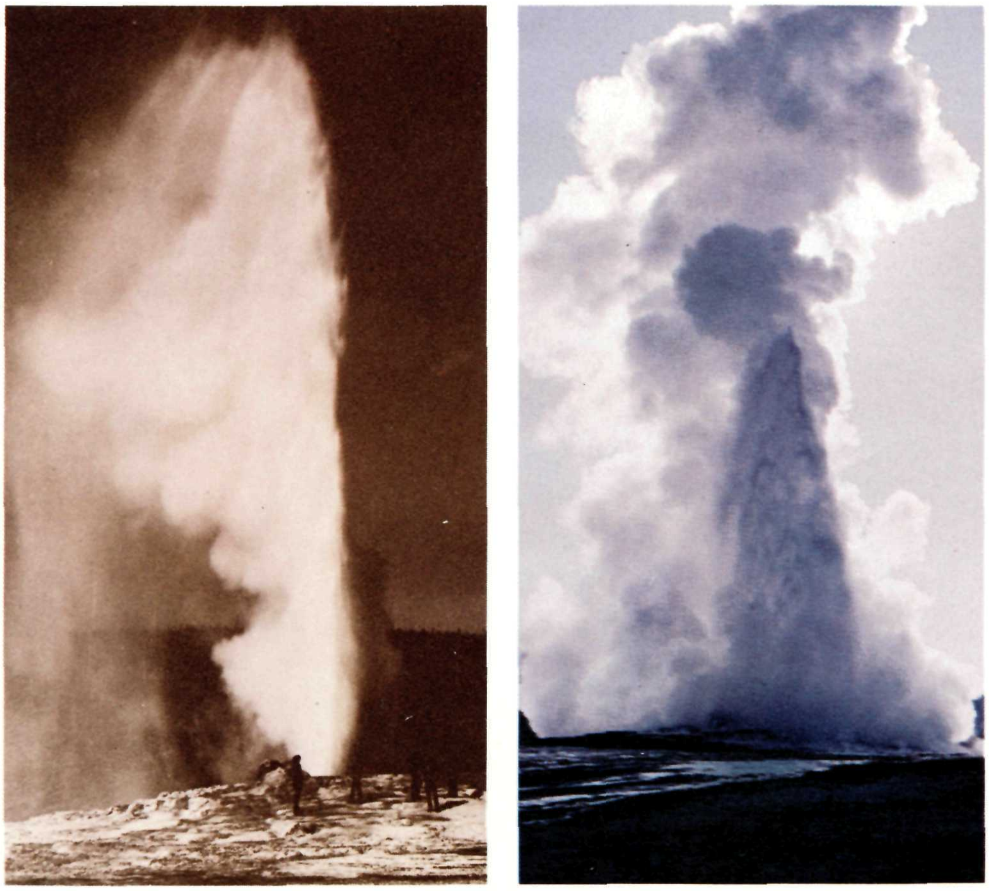
Parks of some kind have been a part of mankind since the earliest civilizations. Usually, however, they were for the privileged few. For the little group of men on their way home from exploring the high plateau containing the headwaters of the Yellowstone River, however, there was little argument—the area was so beautiful, and contained so much that was unique and marvelous that it could not be held for private gain or reserved for the favored few. It must belong to all the people.

The spark was struck on an evening in late September 1870 as the group rested around a campfire at the confluence of the Firehole and Gibbon Rivers. The men had seen the spectacular Grand Canyon of the Yellowstone and its two thundering waterfalls; they had come to the edge of a vast open basin just as a geyser sent its plume 150 feet into the air. And they had wondered at the forces that churned vast pots of mud and tinted the hot springs in vivid colors.

They had verified the tales of trappers and mountain men such as John Colter and Jim Bridger which most people had written off as frontier fabrications. After one man had tentatively suggested that perhaps they could divide the best of this marvelous land among themselves for speculation, another expedition member, Judge Cornelius Hedges of Helena, Montana Territory, spoke. His words were recorded in the diary of another member of the party:

"Mr. Hedges then said that he did not approve of any of these plans—that there ought to be no private ownership of any portion of that region but that the whole of it ought to be set apart as a great national park, and that each one of us ought to make an effort to have this accomplished.

"His suggestion met with an instantaneous and favorable response from all—except one—of the members of our party, and each hour



Two views of Old Faithful at Yellowstone National Park—the one at left was taken 101 years ago by William H. Jackson, whose pictures helped convince Congress the park should be established. Picture at right, taken a century later, indicates little, if any, change in Old Faithful as the 100th anniversary of the national park concept was celebrated.

since that matter was first broached, our enthusiasm has increased."

The enthusiasm of the group—now called the Washburn-Langford-Doane expedition—proved contagious. Within 18 months President U. S. Grant signed into law, on March 1, 1872, the bill setting aside the Yellowstone area "as a public park or pleasuring ground for the benefit and enjoyment of the people. . . ."

Yellowstone National Park was the culmination of a concept that had been developing for several decades. George Catlin, the famous painter of Indian life, suggested in 1832 that land be set aside as a "Nation's Park, containing man and beast, in all the wildness and freshness of their nature's beauty." And President Lincoln, in the closing days of the Civil War, had signed an order transferring the heart of Yosemite Valley to the State of California for the protection of its natural beauty.

But Yellowstone was the first time that national action had been taken to preserve for all the people for all time the best example of natural beauty and wonder.

1972—Centennial Year

In his proclamation of January 5, 1972, President Nixon noted that "a century has come and gone, and in that time the National Park System had grown to include 280 areas embracing the most magnificent examples of America's natural and historical heritage. In every time and season, our parks give of their joys and beauties. They have enriched the citizens of this land beyond measure, and have inspired more than 100 nations to set aside over 1,200 national parks and reserves. Truly, 'one touch of nature makes the whole world kin.' "

The President's proclamation was the official beginning of the National Parks Centennial Year.

Centennial activities were directed by the National Parks Centennial Commission, established by Public Law 91-332, approved by Congress July 10, 1970. The 15 Commission members—six public members chosen by the President, eight from the Congress and Secretary of the Interior Rogers C. B. Morton (George B. Hartzog, Jr., Director of the National Park Service, serves as Executive Director)—decided at their first meeting that the Centennial would be much more than a celebration, that its primary objectives should be to increase public awareness of the value of parks and to encourage public participation in decisions affecting the future of parks.

The first major event of the Centennial was a banquet in Washington, D. C. on March 1, the 100th anniversary of the signing of the Yellowstone Park bill.

Then, on April 15, the National Parks Centennial Symposium was convened at Yosemite National Park, California. This symposium, conducted for the Centennial Commission by the Conservation Foundation, made an in-depth examination of national park policies and programs.

Much of the Symposium output was to be presented at the major international activity on the Centennial schedule— the Second World Conference on National Parks, September 17-26, under sponsorship of the Centennial Commission and the International Union for the Conservation of Nature and Natural Reserves. More than 500 delegates from some 80 nations around the world attended.

Centennial Year events and activities were held in many National Park System areas. Most were held in conjunction with the people living in the park area. These activities ranged from environmental teach-ins to children's art-in-the-park fairs. All shared the hope that many, many Americans would contribute their ideas and their enthusiasm to the National Parks movement.

Parks and People

From 1872 to 1972 the number of National Parks increased from one to 38. In the same period the National Park System has gained 36 other *natural areas known as National* Monuments; 172 historical areas; 36 recreational areas; a cultural park and the parks of the Nation's Capital, Washington, D. C. These park system facilities attracted some 200 million visits in 1971, and with the people came problems—crowding, damage to park values, occasional lawlessness, injuries, some deaths.

National Park Service officials believe that it is not the people themselves who are crowding the parks but the paraphernalia of a technological civilization they bring with them. The most obvious of these are the automobile and recreation vehicle. Cars, roads, and parking lots have demonstrated a capacity to turn park acreage into sterile hardtops. One car uses almost 100 square feet of surface that could comfortably accommodate a dozen people on foot. The obvious thing to do, then, is to encourage people to enjoy parks from outside, rather than inside, their cars.

This has been done, with notable success, at Yosemite National Park. For several years the central attraction in the park, Yosemite Valley, had suffered bumper-to-bumper traffic jams, smog, overcrowded camp sites and many of the problems of civilization that most visitors had come to the park to escape.

National parks have proven popular since Yellowstone was established in 1872. Visitors once came in covered wagons and on horseback. In recent years, automobiles and sophisticated campers launched new generations of park travelers. Finally, so many came, special in-park transportation was developed to reduce motorized traffic and help save the scene.

Now a large measure of peace and serenity has returned to the valley. Visitation at Yosemite is still increasing, but congestion has been all but eliminated. The circulatory road system in the valley has been converted to one-way travel. On the eastern half of the valley floor a free shuttle bus has replaced private vehicle traffic. There is now room on roadways for bicycles, horses, and hikers. New campgrounds on fringes of the park alleviate overcrowding in the valley. With fewer cars and campfires there is less smog and smoke, and a better view of one of the world's most awe-inspiring natural sights. Park visitors have enthusiastically accepted the new plans with most finding a much more rewarding experience in being able to see Yosemite undistracted by the encroachment of civilization.

In March 1972, a similar program was instituted in Everglades National Park, Florida, when the Shark Valley Loop Road was closed to private automobiles and a free shuttle-bus service was begun. Similar proposals were under consideration for Mount McKinley National Park, Alaska, and for the Village area of Grand Canyon National Park, Arizona. Elsewhere in the System, the Service is exploring the possibility of using various forms of mass transit from shuttle bus to aerial cable cars, tramways, and mini-railroads, as alternatives to private cars within parks.

In the high alpine country of North Cascades National Park, for example, the sheer granite cliffs look rugged but would be indelibly scarred by any roadway constructed up their steep sides. A tramway, skillfully placed, would be practically invisible and give visitors an opportunity to get to the top of the mountain and experience the spectacular grandeur of the alpine country without destroying the environment.

In Yosemite and many other parks, too, the National Park Service was faced with other problems as this nation developed into an urban, technological and affluent society. Park visitors are increasingly unaware of the dangers always present in a natural environment. A new generation of young people, with different values and new life styles, are coming to parks in increasing numbers. Recreational vehicles with sophisticated requirements are overtaxing existing facilities and utilities. Increased visitation means increased crime, with parks now host to all the problems present in our society.

Many park facilities were designed for the families with tents or trailers who wanted, and were willing to pay for, heated restrooms and complete laundry facilities. Many younger visitors did not need, nor want, such elaborate facilities and were unable to pay campsite fees which range up to $4 a night. Further, the unorthodox appearance and behavior of some of the younger visitors created suspicion and sometimes unpleasant confrontations with other visitors and with those administering the parks.

To meet this problem the Park Service created new campgrounds with minimal facilities and therefore minimum fees. Park employees have developed innovative interpretive programs while maintaining continual contacts with younger visitors that each may better understand the other.

While there has been a vigorous effort to be able to respond quickly and efficiently to crime in the parks, the new mutual understanding has helped to eliminate confrontations and hostility.

Although millions of people bring their elaborate camping facilities to national park areas, the trend among young campers seems to be campgrounds with minimal facilities and innovative interpretive programs. To preserve the parks, camping in the future may have to be more restrictive than it is now.

In the last decade a minor revolution has occured in camping styles. No longer is the camper content with a flat spot for a tent, a fireplace and a privy. Tent camping in national parks is declining. In its place are a host of "recreational vehicles," many replete with hot and cold running water and color television.

Further, it is obvious that continued campground construction inside the parks could easily change the basic nature of the park. To provide the services the modern camper demands and to save the natural beauty of the parks, the National Park Service is turning to the private sector for construction of campgrounds outside the parks. This allows the camper to have the utility hookups—water, power and sewer—he needs and yet makes it easy for him to visit the park. It also provides new business opportunities and private jobs.

For many Americans five or six famous Parks represent the National Park System. Yet there are many areas in the National Park system that are underused because they are not well known. Topping the national parks visitation list is Great Smoky Mountains National Park in Tennessee and North Carolina. In recent years it has received more than six million annual visits. Nearby Cumberland Gap National Historical Park, which shares much of Great Smoky's Appalachian beauty, had about 260,000 visits annually. Similar examples can be found in parks across the nation.

No park in the National Park System is crowded the year around. Many that have peak summer loads offer spectacular visitor displays—fall color or spring animal migrations—during the "off season." Visitors during these times will discover new dimensions in the park experience.

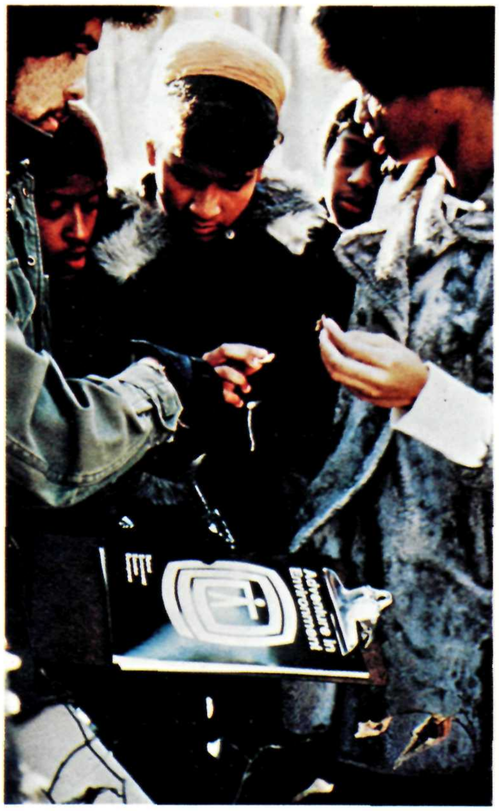
For young people the National Park Service has extensive environmental education programs that can help them understand their environment, so that their actions will be in harmony with that environment and inspire them to work to protect it.

This educational effort consists of three interrelated programs—National Environmental Education Development, or NEED; National Environmental Study Areas, or NESA; and National Environmental Education Landmarks, or NEEL.

NEED is a curriculum-integrated program now available to every school system in the United States. The NESA's, both in and outside parks, are natural or historical laboratories designed primarily for day-use interpretive programs.

The NEEL, or Natural Landmark program, recognizes outstanding locations that are not in Federal ownership, as places in which to teach the relationship between man and his environment.

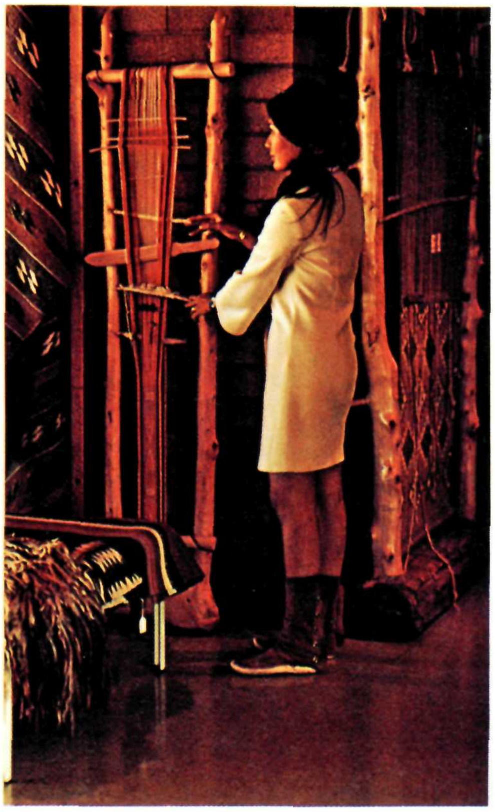
Environmental education helps prepare young people to live in their surroundings harmoniously.



A Volunteers in Parks program was authorized by Congress in 1970 and inaugurated in December of that year by Mrs. Richard Nixon. Almost 1,000 people participated in the program in 1971. They have acted as guides in information centers and have helped in park environmental education programs.

One area which makes good use of the talents and enthusiasm of VIP's is the "Living History" programs now in operation in more than 100 parks. In such programs the park visitor not only looks at something historical, he actually does it. For example, he may help dig a trench on a battlefield,

Park visitors have found they can make America's old culture come alive when they relive the history of our forefathers through such innovations as craft demonstrations.



shock corn at a Colonial farm, buy hardtack at a Civil War sutler's shop, or see and buy cornmeal ground at a craft demonstration.

While bringing new life to established parks, the National Park System has gained a new kind of park, dedicated to helping people better appreciate their cultural heritage. This is the National Cultural Park.

The first of these parks, which opened in 1971, is Wolf Trap Farm Park for the Performing Arts in the Washington, D .C. suburb of Vienna, Virginia.

The proposed Zuni-Cibola National Cultural Park, New Mexico, is an example of a cooperative effort with an Indian tribe. It is designed to help the tribal members improve their local economy while at the same time preserving the rich culture of their ancestors for themselves and for the visitor.

Zuni-Cibola National Park would encompass a present day pueblo, (Zuni) where Indians live in much the same setting and in the exact location Coronado visited in 1540 on a disappointing search for gold at the Seven Cities of Cibola. The park would also contain the restored ruins of several pueblos abandoned even after Europeans first visited the area.

This proposal would assure the continuation of tribal culture on their own terms, sharing with the visitor those things they believe he could appreciate and understand. The jobs and income that accompanies tourism would help many Zunis stay in the ancestral homes that mean so much to them.

The Park Service is working with other tribes, too—from the Ute Mountain Tribe in southwest Colorado to the Crows, Northern Cheyennes and Blackfeet of Montana. In addition to helping tribes develop tourism resources on their reservations, the Service provides park ranger training for young Indians at its Albright Training Center at Grand Canyon National Park, Arizona.

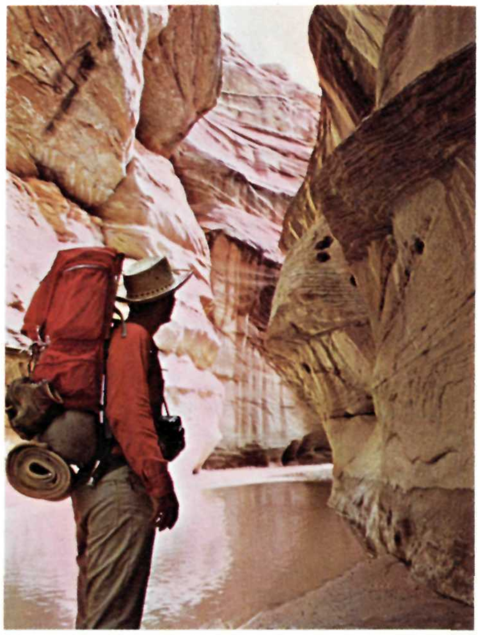
In 1964, Congress passed legislation authorizing a National Wilderness Preservation System to be comprised of lands of the National Park Service, the U.S. Forest Service and the National Wildlife Refuge System. All roadless areas of 5,000 contiguous acres or more within those systems are to be studied by 1974 for possible inclusion in the Wilderness System. Some 61 National Park System areas contain potential Wilderness areas and are being reviewed for that purpose.

Wilderness areas covering 43,243 acres in Craters of the Moon National Monument, Idaho, and 50,260 acres in Petrified Forest National Park, Arizona, have been formally designated as Wilderness areas by the Congress. President Nixon has recommended Congressional approval of an additional 1,508,910 acres in 15 other National Park System areas.

Because the Wilderness Act of 1964 applies exclusively to lands managed by the Forest Service, National Park Service, and Fish and Wildlife Service, the Bureau of Land Management uses the term "Primitive Areas" to designate lands it sets aside by administrative action to preserve their wild character.

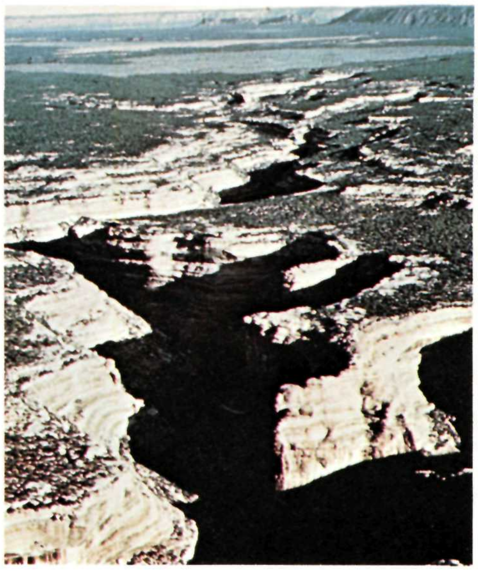
BLM has designated the following Primitive Areas:

- Paria Canyon Primitive Area, Arizona-Utah, 28,000 acres;
- Aravaipa Canyon Primitive Area, Arizona, 5,300 acres;
- Grand Gulch Primitive Area, Utah, 36,000 acres;
- Dark Canyon Primitive Area, Utah, 74,000 acres;
- Bear Trap Canyon Primitive Area, Montana, 3,200 acres;
- Humbug Spires Primitive Area, Montana, 7,000 acres.

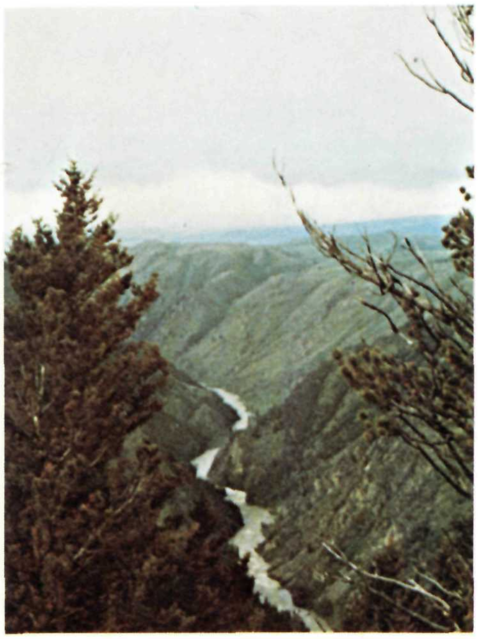


Paria Canyon, Arizona.

Aravaipa Canyon, Arizona.

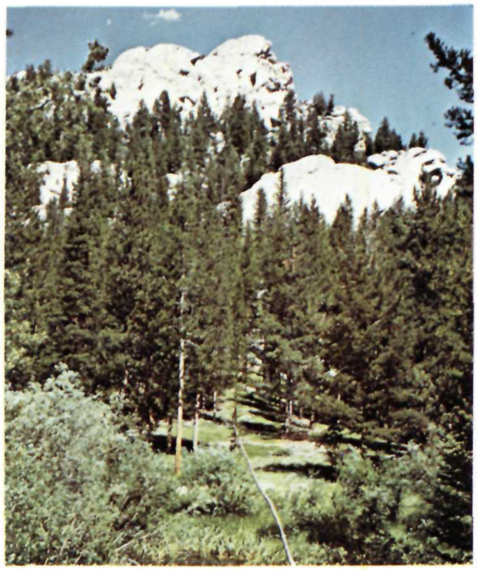


Grand Gulch, Utah.



Bear Trap Canyon, Montana.

Dark Canyon, Utah.



Humbug Spires, Montana.

A new area to save an old established park was proposed by President Nixon on November 23, 1971, when he directed Secretary Morton to prepare legislation to create a Big Cypress National Fresh Water Reserve in southern Florida. Under the Administration's proposal the Reserve would be administered by the Secretary of the Interior in accordance with the laws that govern the National Park System. This would protect the Big Cypress Swamp which lies to the north of Everglades National Park. The swamp is an immense shallow river which flows southward into the Park, providing vital water for the park's varied fish and wildlife and also for the breeding grounds for the marine life which sustains a large off-shore fishing industry.

On March 1, 1972,—the 100th anniversary of the national park concept—President Nixon signed into law an act creating Buffalo National River in northwestern Arkansas as the latest addition to the National Park System.

Director Hartzog has suggested another means of creating new park lands—through recycling of land abused by such industrial practices as strip-mining. Pointing out that much of the present environmental protection effort is devoted to increasing the recycling of natural resources, Hartzog noted that nature "will heal abused land." He has suggested the lands not now considered useful can be acquired, put in a reserve status for 25 or 30 years during which time they are restored to a natural state that will make them eligible for national park status.

During the National Parks Centennial Year the Nation took a closer look at its National Park System. They saw, in Secretary Morton's words, a system that "reaffirmed the belief that man cannot live by bread alone—that he has moral and spiritual needs, and that in utilizing the earth's resources, we must preserve sanctuaries where our kinship with all nature can be constantly renewed, and understood."

A Fund Delivers

The Land and Water Conservation Fund administered by the Bureau of Outdoor Recreation continued to be the most widely-used vehicle for acquiring and developing public recreation lands and waters.

Beginning in 1965, it has funded Federal park and recreation land purchases, and matched State and local monies 50-50 for areas of their own.

Since 1969 the Fund's impact has grown far beyond its original concept. Until 1968, the Fund existed on appropriations based on estimated receipts from Federal recreation fees, motorboat fuel taxes, and sales of surplus Federal real property. Then the Act establishing the Fund was amended to include money from mineral leasing receipts from the Outer Continental Shelf. President Nixon recommended—and Congress approved—action to increase the authorization for annual appropriations from the Fund to $300 million.

While the Fund provides stable amounts of money, States and their political subdivisions realize that meeting recreation needs depends on local initiative as much as on Federal assistance. Between 1965 and 1971 voters approved State and local recreation and conservation bond issues totaling more than $1.8 billion. Thus, the Fund spurred governments and voters to reach as far as cash resources would allow to preserve much needed open space. In the first four and one-half fiscal years of the Fund's existence—January 1, 1965 through June 30, 1969—only $510 million was made available from the Fund for State, local, and Federal purposes.

From July 1, 1969 through June 30, 1973, President Nixon will have budgeted or made available nearly $1,150,000,000 from the Fund for State, local, and national uses.

During that four-year period, States and local governments will have matched approximately $700 million in Fund appropriations, thus providing a total of about $1.4 billion that will be used to assist States and their localities in meeting pressing outdoor recreation needs.

Innovation is a key word in the Federal-State partnership to build America's recreation estate. The Fund has supported a number of "first-time" projects to see if they can be adopted generally by States.

Prior to the Fund, each Federal agency had to throw recreation purchase projects into the budget and hope for the best. By providing earmarked money, the Fund channels requests of Agriculture's Forest Service, and Interior's National Park Service, Fish and Wildlife Service and Bureau of Land Management into a single budget request. The Fund has wrought dreams into reality to save coastal redwoods, expand the role of our national parks and forests, preserve free-flowing wild and scenic rivers, add to national scenic trails, restore the habitat of endangered species of wildlife, and protect irreplaceable ecosystems.

From January 1965 through June 1969, Fund-supported Federal land acquisition totalled $245 million. For the four following fiscal years—July 1, 1969 through June 30, 1973—nearly twice that sum has been requested to acquire land for national recreation purposes. Through long-range financing, technical assistance and planning, and wise use of available cooperative efforts its objective will continue to play a vital role in building a legacy that has attracted attention in the world community.

A "Legacy of Parks"

When President Nixon announced in February 1971 his goal of creating a "Legacy of Parks" he brought into focus the Land and Water Conservation Fund, and added an Executive push to the transfer of surplus Federal lands to States and localities for public recreation.

The President sought and received from Congress Public Law 91–485, which provides that the Department of the Interior can convey surplus Federal real property to State and local governments for park and recreation use at discounts ranging to 100 percent. This put park and recreation needs on an equal footing in the land disposal process with other needs, such as health and education.

The President also created by Executive Order the Property Review Board, responsible for an overall review of the Federal Government's real property management and settlement of interagency disputes over use or disposal of lands no longer needed by the holding agency.

Presidential action, combined with legislation and a quick response by Interior's Bureau of Outdoor Recreation and the General Services Administration, has conveyed for State and local use well over 100 properties in more than 30 States in less than one year.

Average per-acre values of lands turned over to State and local park and recreation agencies run about $4,000, because much of it is in or near highly urbanized regions. Examples include 3.2 acres conveyed at no cost to Memphis, Tennessee, in January 1971 valued at over $130,000. The land once held military family housing and will now link two public parks as part of the ambitious Mississippi River Front Park, developed jointly by Memphis and Shelby County, and also assisted by a $310,000 grant from the Secretary's Contingency Reserve of the Land and Water Conservation Fund.

Other significant conveyances, from Alaska to Puerto Rico and from California to Maine, include these examples: 371 acres of Border Field, valued at $2.3 million, transferred to the State of California; 2,937 acres of Fort Custer at Battle Creek, Michigan, valued at $850,000 and transferred at no cost to the State of Michigan; 141 acres of Fort Snelling near Minneapolis-St. Paul, valued in excess of $3 million, conveyed to the State of Minnesota; and 2,137 acres of land no longer needed by the Atomic Energy Commission at its Brookhaven National Laboratory on Long Island, New York, valued at more than $8 million, conveyed to the State of New York, which will arrange with the Town of Brookhaven for joint development and administration of part of the property.

Trails for Everyone

Americans who enjoy the outdoors find more and more trails to follow—for walking, hiking, bicycling, snowmobiling, skiing and other activities.

By their very nature trails provide recreation for a relatively small cost. A trail can bring a breath of nature to all the communities along its way, even though it is only a ribbon of green with a meandering border.

Many of them are National Recreation Trails. They vary widely. Pinnell Mountain Trail, for example, runs 24 miles along the alpine ridge of the Alaska Range and the Yukon Valley on lands administered by Interior's Bureau of Land Management. The

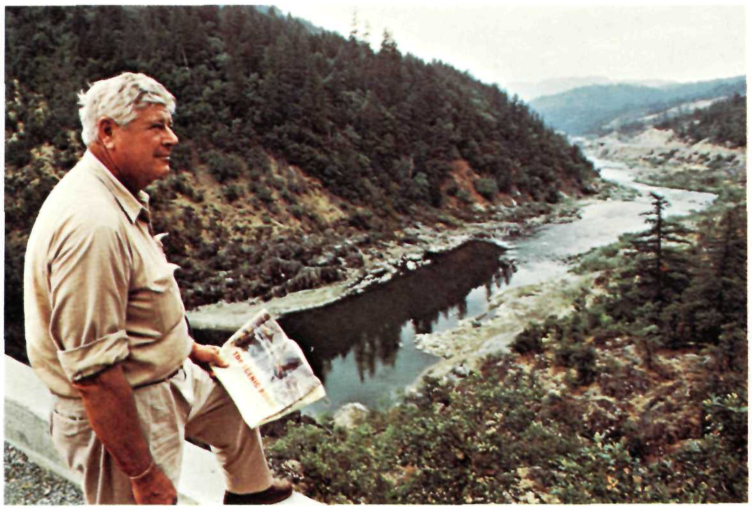
Elroy-Sparta Trail is a 30-mile foot, bicycle/snowmobile trail (depending on the season) constructed on an abandoned Chicago & North Western Railroad right-of-way and developed by the State of Wisconsin as a part of the Wisconsin Bikeway. Another is a 6.5-mile foot trail within Georgia's Stone Mountain Memorial Park owned by the Memorial Park Association and maintained by local Boy Scouts.

National Recreation Trails are the fastest growing component of the National Trails System, established by the National Trails Act of 1968. There now are 31 National Recreation Trails in the system, 29 of them added since June of 1971. Some have been developed with special features for persons with handicaps, including a one-quarter of a mile foot and wheelchair trail in TVA's Land-Between-the-Lakes Conservation Education Center in Kentucky.

National Recreation Trails are in 21 States and the District of Columbia and range in length from one-quarter of a mile to 30 miles. Most are near urban centers. Three are administered by private groups and open to the general public. Ten are administered by Federal agencies—two by the Army Corps of Engineers, one by TVA, one by the National Park Service, two by the Forest Service, and four by the Bureau of Land Management. Seven are managed by States, and 11 by local governments. The fact that three privately owned and operated trails have earned national recognition is testimony to the private sector's interest in quality trails. During a three-day symposium held in Washington, D.C., in June 1971 under the joint sponsorship of Interior's Bureau of Outdoor Recreation, Agriculture's Forest Service, and the private Open Lands Project of Chicago, Secretary Morton personally announced the designation of 27 of these national recreation trails.

State and local action supporting the

Trails have become increasingly popular across the Nation. Some lead followers for thousands of miles, others extend a few hundred yards, but all have the same general idea: change and relaxation. Above, a hiker pauses at the Lolo Post Office on the Lewis and Clark Trail in Idaho; right, a veteran walker takes a well-earned snooze; and, below, young bicyclists ride along the C and O Canal near the Nation's Capital.



Secretary of the Interior Morton draws inspiration from the scenic Rogue River in Southwestern Oregon. The famed winding white-water stream is part of the National Wild and Scenic Rivers System.

program also has been outstanding. Since passage of the Act, 10 States have passed legislation to conduct studies or to establish a State trails system. An additional 8 States have drafted or are considering trails legislation. About three-quarters of the States have state-financed trails programs. Oregon recently passed a law setting aside not less than one percent (about $2.5 million) of the State Highway Fund for foot and bicycle trails. They do not have to be close to highways.

BOR estimates that about 4 percent of Land and Water Fund grants for development and one percent of grants for land acquisition have been for trails.

A nature trail was important in Michigan's plan to acquire 885 acres of parklands 24 miles from downtown Detroit. The State received a grant of $1.5 million for the project that will include camping facilities, playfields and winter sports areas. Georgia, with a $63,687 grant from the Fund, is developing nature study and hiking trails on lands in Panola Mountain State Park near Atlanta.

Of major importance is the establishment of National Scenic Trails throughout the country. These must be long-distance trails of national natural or historic significance. Only Congress may designate them. The Act established the 2,000-mile Appalachian Trail in the East and the 2,400-mile Pacific Crest Trail in the West as the Nation's first National Scenic Trails. Fourteen other trails were named for possible addition to the System. Studies of two are nearing completion—Continental Divide and Potomac Heritage; other studies, including the North Country, Oregon and Mormon trails, are underway.

Threads of Nature

For a rewarding recreation experience, few resources can rival the qualities of a river flowing free through its natural environment. Action to preserve our unspoiled rivers continues with the help of the Departments of the Interior and Agriculture, and State and local governments.

There are nine National Wild and Scenic Rivers: St. Croix in Minnesota and Wisconsin, Wolf in Wisconsin, Rio Grande in New Mexico, Rogue in Oregon, Feather in California, Salmon and the Middle Fork of Clearwater in Idaho, and Eleven Point in Missouri. These were named by Congress in 1968 as "instant" components of the National Wild and Scenic Rivers System. The ninth, Maine's Allagash Wilderness Waterway, was the first State-administered river granted national designation under the Act.

The program was established to preserve America's outstanding free-flowing streams as national wild, scenic or recreational riverways. Criteria for each category, allowing for varying degrees of recreational use or development, have been established. The Department of the Interior administers portions of the St. Croix, Wolf, Rio Grande, and Rogue Rivers.

A 48-mile stretch of the Rio Grande Gorge in northern New Mexico, dedicated May 13, 1970, was the first Federal component dedicated in the System. Along this stretch, the Rio Grande runs through a spectacular basalt-rimmed gorge up to 800 feet deep. The high steep walls of the narrow gorge have prevented excessive development of the river. The gorge is administered by Interior's Bureau of Land Management.

BLM and the Forest Service jointly administer the Rogue River in southwestern Oregon as a component of the System. The Rogue is famous for its white water and fishing. Among the points of interest along the Bureau's 47-mile stretch of the river is the cabin used by the famous writer of western novels, Zane Gray, at the time he wrote "Rogue River Feud."

The National Wild and Scenic Rivers Act authorized 27 river studies, to be completed by 1978, to see if they should be added to the System, and

Unspoiled streams have a magical, appealing quality for everyone. Here two youngsters pause wistfully along a stretch of the Rio Grande, a national wild and scenic river in northern New Mexico.

urged State and local governments to study their wild and scenic rivers and take action to preserve them.

Interior is responsible for 18 "study" river areas named in the Act. An interagency task force coordinates the river studies with other concerned Federal agencies, State and local governments, and citizen groups.

Three Interior studies—289 miles of the Suwannee River in Florida and Georgia; 80 miles of the Upper Iowa in Iowa; and 90 miles of the Clarion in Pennsylvania—were completed in 1971. The studies recommend that two be added to the national system—the Suwannee under Joint Federal-State management and the Upper Iowa under State management. The Clarion was not recommended for national designation because the quality of its water did not measure up. It is up to Congress to make the final determination on the designations. Six river studies were expected to be completed in 1972: the Lower St. Croix in Minnesota and Wisconsin; the Little Miami in Ohio; the Delaware in Pennsylvania and New York; the Allegheny in Pennsylvania; the Youghiogheny in Maryland and Pennsylvania; and the Missouri in Montana. Others are underway.

About 40 States have actively participated in the program. Some have established statewide river preservation systems, others have chosen specific rivers for State designation or are studying their rivers for possible designation at the State or national level. A river designated as a state wild, scenic or recreational river may be proposed for inclusion in the national system. The Secretary of the Interior has the authority to grant national status to a State river if it meets the national criteria. The river area, however, continues to be administered by the State at no cost to the Federal Government.

They Love The Desert

The pioneers who struggled across America's vast inland deserts seeking arable lands and mineral wealth never would have believed how highly prized these "wastelands" would become by their 20th Century descendants.

As population grows and open spaces diminish, a closer look has shown fast-growing appreciation of the deserts as havens for unusual forms of life, as playgrounds for sun-hungry millions of urbanites, as valuable watershed and wilderness, and as a source of many minerals needed by a technological society.

Reconciling these and other legitimate uses is a primary duty of Interior's Bureau of Land Management. The chief pressure point has been the desert lands of Southern California, which draw city dwellers and suburbanites by the tens of thousands almost every day, in search of sunshine, clean air, space and scenery.

The California Desert's two distinctly different provinces are the high and dry Mohave and the Colorado River basin, some of which lies below sea level. Overall, its 16 million acres attract 7.5 million visitor-days of recreation use each year. By the year 2000, BLM estimates, this will balloon to 50 million visitor-days annually—about one-fourth as many visits as were logged by all the units of the entire National Park System in 1971.

Desert lands are fragile. Tracks left on a hillside by motorcycles, dune buggies or other vehicles can funnel raging floods after a cloudburst, wrecking nature's patterns and silting downstream waters. Vegetation grows slowly; the scars do not heal as in humid climes. Wild creatures' habitats can be destroyed, leaving them to adapt further or die, with an entire unique system of life in the balance.

Land ownership patterns are irregular. Long-abandoned mining claims can be death traps for the unwary; other developments block access to precious recreation spots, water holes and archaeological treasures. Many desert areas are eyesores of human junk and clutter, with miles of tarpaper shacks defacing a starkly beautiful land.

Unequipped with enough legal authority or manpower to manage the region for its explosive growth of "people problems," BLM has conducted a series of studies aided by its California State Advisory Board of citizens. The studies indicate a need for parkways, more picnic and camping facilities, trails of various kinds, rescue and police services, and other means of serving people while protecting resources.

The task will not be easy, for there are many legitimate uses. Livestock graze in parts of the region. Mineral extraction in the California desert pumps $180 million a year into the economy, and this may rise to $300 million by the turn of the century.

On May 1, 1972, Secretary of the Interior Morton made a bold beginning, designating 19 major recreation areas on BLM-managed lands in Imperial, Riverside and San Bernardino Counties. Totaling 2.7 million acres, they will be managed under multiple-use principles with primary emphasis on recreational, historical, cultural and natural values.

And the scenic and recreation values are splendid: Joshua trees and other unusual plant life, a surprisingly wide range of animal and bird inhabitants, spectacular mountain ranges, painted in ever-changing colors like the fascinating dunes and canyons.

While studies proceed, and new legislation is considered, another desert study is underway by BLM in a less pressured area: Wyoming's 4.5-million-acre, high Red Desert. Five million travelers cross this desert on Interstate 80 each year; recreation use is relatively small, but increasing. The Red Desert provides about one-fourth of the feed for Wyoming's licensed livestock operations, so range requirements must be met. A checkerboard land ownership pattern presents complications, but commercial mineral use is small. Hope therefore exists that planning for increased use by visitors can be started effectively before the "people pressures" become overwhelming.

Bringing Parks To People

In his 1972 Message on the Environment, President Nixon urged action to "enrich leisure opportunities and make the beauties of the earth and sea accessible to all Americans."

Interior's studies show that about 75 percent of all outdoor recreation activity takes place near home—after school or work, or on weekends. And 75 percent of our people live in urban and suburban areas, most of them far from the best known National Parks. Open space continues to disappear under concrete in their immediate areas, while the rate of use of the available outdoors has been rising at least 10 percent each year.

The Land and Water Conservation Fund has pumped increasing sums into land acquisition for parklands near metropolitan areas. For example, in fiscal 1972 alone, $37 million was allocated to add almost 40,000 acres to national park and recreation areas within easy reach of major coastal cities: Point Reyes National Seashore near San Francisco, Everglades National Park and Biscayne National Monument, near Miami; Cape Cod National Seashore and Minute Man National Historic Park near Boston; and Delaware Water Gap National Recreation Area, near New York and Philadelphia and the C and O National Historical Park near Washington, D.C.

Desert areas—fragile and singularly beautiful—are attracting increasing numbers of recreationists. Here are desert scenes in California and Arizona.

More funds for similar areas were budgeted for fiscal 1973.

Out of some 7,000 grants from the Fund that have been matched by State and local governments, almost 1,700 were for projects in urban areas, and nearly 1,800 more for recreation areas within an hour's drive of large metropolitan populations. The trend in this direction continued to rise, with projects approved for such areas as Los Angeles, Cincinnati, Springfield, Ill., Teaneck, N.J., and many others.

New concepts were encouraged. The City of New Orleans used land under and adjoining an expressway for a swimming pool, children's playground and outdoor game area. In a low-income Indianapolis neighborhood, three streets and an alley were closed to create a little park; in Baltimore another alley was closed and a neighborhood playground took its place. In Portland, Ore., an underground parking garage received a cover of grass, trees and benches, and a pleasant mini-park resulted. Land and Water Conservation Fund administrators call this their inner-city demonstration program; other beneficiaries included residents of Chicago, East Baton Rouge, La., Newark, Tucson, Cleveland, Seattle, Racine, Wis., Richmond and Los Angeles.

Interior's Bureau of Outdoor Recreation has also provided technical assistance to summer recreation programs for inner-city youngsters, funded by the Department of Labor's Manpower Administration, and planned by the cities themselves. In two years almost two million children enjoyed outdoor activities that included camping, horseback riding, hiking, sports, photography, fishing, swimming, cultural trips, arts and crafts, boating and canoeing. Universities, private youth and church groups, and in some areas military and naval installations cooperated by opening gymnasiums, pools, and ballfields and by lending trained assistance.

As our cities grow and the population increases, the need to utilize all available space becomes evident. Top, bicycling on a pier in New York City; a vest-pocket park in Washington, D.C.; a playground under an expressway in New Orleans; "Summer in the Parks" concert in U.S. Capital.

The National Park Service has widened its earlier "Summer in the Parks" program in the Washington, D. C. area to a "Parks for All Seasons" which makes use of both indoor and outdoor sites to supply music, drama, sports, handicraft instruction and a wide variety of other activities for young and old, in daytimes and in the evenings. This model program is sparking ideas in cities across the Nation.

Controlling Off-Road Vehicles

The advent of off-road vehicles as popular recreation chariots to wild and scenic areas has been heating up a conflict among conservationists, recreationists, developers and public land managers for several years.

The industry is one of the fastest-growing in America. President Nixon reported in February 1972 that an Interior Department study showed there were five million motorized off-road recreation vehicles (ORRVs) in the United States—motorcycles, minibikes, trail bikes, snowmobiles, dune and swamp buggies, all-terrain vehicles (ATVs), airboats and hovercraft and others.

Damage to lands and their resources could become a serious problem, leading to erosion, danger to wildlife, loss of ground cover and other difficulties.

The conflict, and the dilemma, impelled President Nixon to issue an Executive Order directing the Secretaries of the Interior, Agriculture, and the Army, and the Board of Directors of the TVA, to develop new rules providing for control over the use of off-road vehicles on Federal lands under their respective jurisdictions.

The President ordered each Department and agency head to develop and issue regulations within six months of his February 1972 Executive Order, which would provide for specific areas and trails on Federal lands for off-road vehicle use; designate areas barred from such use; and set a date by which this kind of designation of all public lands would be completed.

The regulations, he specified, must be directed toward protecting public land resources, promoting the safety of all users of these lands, and minimizing conflicts among the various uses.

Use of off-road recreation vehicles must be controlled to prevent irreparable environmental damage.

Areas and trails, under the order, must be located to minimize: damage to soil, watershed, vegetation, or other resources; harassment of wildlife or significant disruption of wildlife habitat; and conflicts between ORRV use and other present or potential recreational uses of the same or neighboring public lands, while assuring compatibility with the lives of persons living in areas nearby, "taking into account noise and other factors."

The order further specified that ORRV areas and trails may not be located inside officially designated Wilderness or Primitive Areas. They may be placed in National Park areas, Natural Areas, or National Wildlife Refuges and Game Ranges—but only if the agency head determines that ORRV use will not adversely affect natural, aesthetic or scenic values.

Opportunity must be ensured for public participation in the development of these rules and the designations of trails and areas open to ORRVs.

Within a year of the February 1972 Executive Order, regulations must be developed and published for ORRV operating conditions on these areas and trails—protecting resource values, preserving public health, safety and welfare and minimizing conflicts of use. Trails must be marked, and maps must be made available.

Penalties shall be developed, and the use of ORRVs must be monitored by the agencies and changed when necessary to further the policies laid down in the Executive Order.

The Federal action augments State, local and private concern about various phases of off-road vehicle use for recreation.

A number of State and local governments and private organizations have established ORRV trails, areas, and regulations. About 25 States have passed legislation dealing with ORRV use, registration, operation, and safety, and though most of these deal only with snowmobiling, all off-road recreational vehicle use is getting attention at State capitols. Local governments are involved, too. A recent survey undertaken by the National Recreation and Parks Association, in cooperation with the Bureau of Outdoor Recreation, found that local governments have provided about 530 miles of trails for snowmobiles and 143 miles for motorcycles.

ORRV manufacturers and user organizations generally recognize that severe damage may be done to the environment by unregulated use, and that by their very nature, the ORRVs may adversely affect the experiences of outdoor recreationists.

Drastic changes will occur in the next few years in use of these "roadless wonders," but with the increased attention being paid to the activity and its users, it is hoped that the controversies will cool, and all Americans will be able to enjoy our great outdoor resources in harmony.

Johnny Catches On

A clean environment is an urgent national priority. One of the most successful Federal efforts to clean up the land has come through Johnny Horizon. Developed by Interior's

HI! I'M JOHNNY HORIZON'S NEW PARTNER. I NEED YOUR HELP.
SCHULZ

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Pollution is nearly everywhere. Interior-born Johnny Horizon lends a hand when he can. Here, Scouts are filling Johnny's bags with litter and sprucing up a parking lot.

Bureau of Land Management, Johnny has attracted wide citizen support.

To help Johnny in his fight against pollution, his program has been strengthened to set him on a course that should make him the Nation's No. 1 symbol for a clean environment. In July 1972, Johnny's program was given Departmental status and its objectives greatly expanded and revitalized. Carrying the banner, Johnny Horizon 76—Clean Up Our Country by Our 200th Birthday—Johnny offers great promise. The theme, "I'll Help, Too!", asks you to reinforce the Nation's determination to clean up the land by 1976.

Federal agencies, such as the Tennessee Valley Authority, the Army Corps of Engineers, and the U. S. Postal Service, are active in the effort. Entertainment personalities, such as Burl Ives, Randy Sparks, Karen Blackwell, David Frost, Roy Clark, Ed McMahon, Henry Gibson, and Dinah Shore, have donated time and talent worth many thousands of dollars. But more important, men, women, and children, either individually or in groups representing their school, community, social organization or place of work, have given their time and talents.

An excellent example of how well they respond is the latest Johnny Horizon recruit. Snoopy—fighter pilot, former Head Beagle, and illustrious star of Charles M. Schulz's comic strip, "Peanuts"—is now a full partner in the program. Snoopy's flying secretary, Woodstock, also is a partner. Both urge everyone who wants a cleaner land to write to Johnny Horizon, U. S. Department of the Interior, Washington, D. C. 20240, and ask for Snoopy's brochure which tells how to help.

Interior And The Arts

"Every genuine work of art has as much reason for being as the earth and the sun." These words of Ralph Waldo Emerson express the philosophy of the Department of the Interior in its efforts to contribute through the arts to its established missions of preserving natural beauty.

For the first Americans, the Indians, art is the core of being. That which the Indian reveres, that which he makes a part of the pattern of life, becomes the motif of his art.

Since the early thirties Interior's Bureau of Indian Affairs has recognized the opportunity specialized art education can provide for Indian youths. At that time, the Santa Fe Indian Boarding School became a center for art training, primarily painting. About 30 years later, the facilities were remodeled as the Institute of American Indian Arts, offering an expanded program.

At present the Institute provides training in virtually every field of art—painting, graphics, sculpture, ceramics, textiles, exhibition arts, photography, drama, music, dance and creative writing. Students are encouraged to express their unique heritage in both traditional and non-traditional media and forms. This summer, selected Bureau of Indian Affairs teachers spent one month at the Institute gaining knowledge of Indian arts and crafts and increasing their awareness of the cultural and psychological needs of Indian youth today.

The BIA has not limited its arts program to classes conducted in Santa

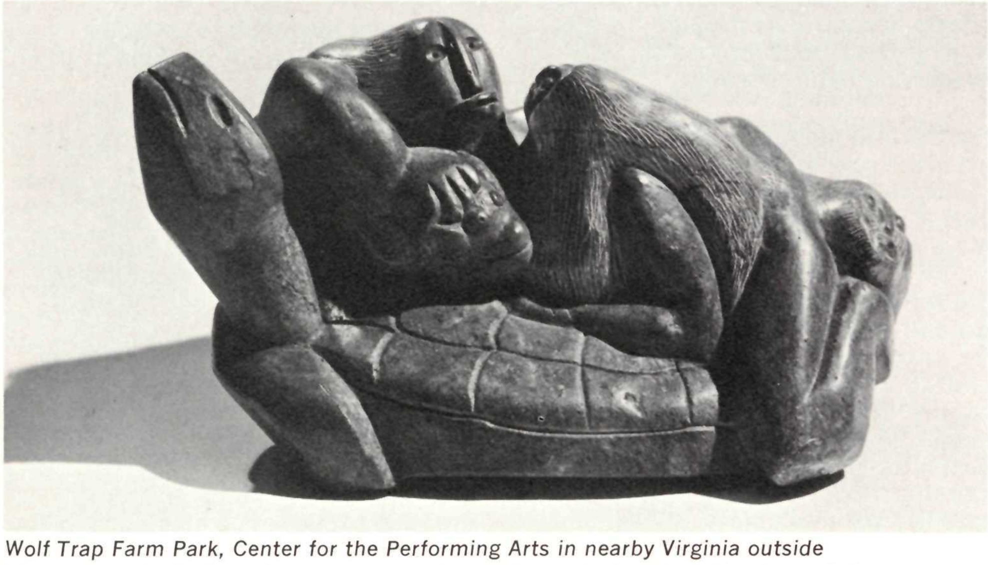
Fe. The Bureau literally has taken its program to Indians throughout the Nation. Five vans carry itinerant teachers to every Federal Indian elementary and secondary school that does not have its own art instructor. The vans have drawing boards, modelling wheels, silverworking and audio-visual equipment and libraries. They also offer photographs, exhibits, teaching kits, maps and art collections. The vans have proved extremely popular, attracting the attention of whole communities.

At the roots of the program to promote Indian arts is the Indian Arts and Crafts Board, established by Congress in 1935. The Board serves as an informational, promotional and advisory clearinghouse encouraging the development of outstanding contemporary Indian, Eskimo and Aleut arts. The Board administers three Indian Museums and Crafts Centers; develops publications on technical and consumer information; provides advisory assistance in planning and conducting demonstration workshops to improve the skills of craftsmen; and helps in production and marketing operations as requested by Native American groups.

While Interior's interest in the arts begins with programs to recognize and promote Indian arts, the Department's other bureaus have their own ways of highlighting the importance of creativity.

The National Park Service believes there is no public outlet which holds greater promise for the arts and artists than the parks program—promise of employment and fulfillment, promise of communication with a new audience, promise of a contribution to the quality of urban life.

In many American cities, parks are thought of as "still lifes" to be enjoyed at a distance. Urban parks often are unused, obsolete open space



Wolf Trap Farm Park, Center for the Performing Arts in nearby Virginia outside Washington, D. C., brought a new dimension to the Nation's cultural heritage. Below figurine, "A Creation Myth" by Duffy Wilson. This carved steatite is illustrative of outstanding artistic accomplishments by American Indians—the first Americans—for whom art is the core of being.

filled with dilapidated benches, pigeons and debris. To bring these parks to life, the community and its talents are being tapped.

The "Parks for All Seasons" program, was designed by the National Park Service to promote the use of urban parks. It has brought people to parks to listen to gospel singing, view outdoor art fairs, and move to the beat of hard rock. Each year this program has expanded, featuring a greater variety of activities and encompassing more cities. Communities are encouraged to participate actively in creating the art scene in local recreation areas.

In 1970, President Nixon wrote a letter to the Secretary of the Interior encouraging the National Park Service to contract with the National Symphony for a series of "Summer in the Parks" concerts in Washington, D.C. This resulted in 23 concerts that year, and a similar letter brought 28 concerts the next summer. The Symphony added yet another dimension to the "Summer in the Parks" program.

The National Park Service recently gained a new kind of park, dedicated to helping people better appreciate their cultural heritage. This is the National Cultural Park.

The first of these parks, Wolf Trap Farm Park for the Performing Arts, opened in 1971 in Vienna, Virginia, a suburb of Washington, D. C. The structure itself is built of unpainted Oregon red cedar which will weather to a silvery grey and blend visually with the surrounding landscape. The theater has a combined balcony and main floor seating capacity of 3,500, with 3,000 seats in the grass-covered natural bowl above the structure. Among the feature attractions of the first season were the Preservation Hall Jazz Band of New Orleans, the New York City Opera Company, the Cleveland Symphony Orchestra, Voices

The National Park Service's "Parks for All Seasons" program has brought vitality to urban life. Left—rock music festival, dancing at noon, Bob Hope and company at Ford's Theater, and Rock Creek Park symphony. Right—Jousting, young performers at Lafayette Park, Ford Theater performers in "Mother Earth," and the Art Barn.

of East Harlem, and the 33rd National Folk Festival. Through a cooperative agreement with The American University, young artists and performers are given an opportunity to develop their skills before live audiences.

Like many other areas in the National Park System, Wolf Trap Farm Park for the Performing Arts came into being through the generosity of private citizens. In this case the donor is Mrs. Jouett Shouse of Washington, D. C., who gave both the land for the park and the funds to construct the theater. Mrs. Richard Nixon serves as honorary chairman of the Wolf Trap Foundation.

Other cultural parks are being considered. The proposed Zuni-Cibola National Cultural Park, New Mexico, is an example of a cooperative effort with an Indian tribe. It is designed to help the tribal members improve their local economy while at the same time preserving the rich culture of their ancestors for themselves and for the visitor. Since the Zuni portion of the park would be managed by the Zunis themselves, they could assure the continuation of tribal culture on their own terms.

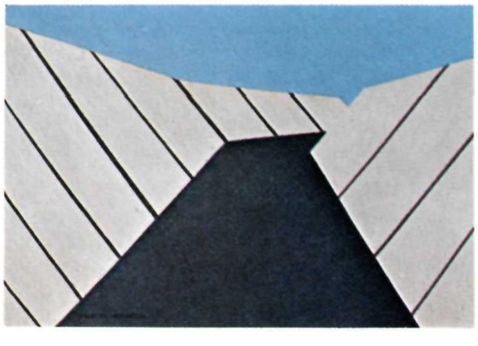
Park Service restoration of Ford's Theater, the theater where President Lincoln was shot, was completed four years ago. Today visitors to Washington can enjoy a variety of productions on this intimate stage. For those who may never have the opportunity to attend a performance in person, television networks have carried three programs originating at Ford's. The two "Festival at Ford's" featured America's favorite entertainers—Pearl Bailey, Carol Channing, Henry Fonda, Dionne Warwicke, Helen Hayes, Bobbie Gentry, Bob Hope and Andy Williams, to name but a few.

The Ford's Theatre Society is charged with developing a contemporary performing arts program, and the Park Service maintains the Lincoln Museum in the basement of the theater as well as the historic building itself. Productions have not been limited to traditional presentations. This year "Mother Earth", a rock musical about ecology, was presented. The show impressed Secretary Morton so greatly that he invited the cast to come to the Main Interior Building and perform for employees.

Other Park Service ventures in the arts include an Artists in Residence Program at Delaware Water Gap in Pennsylvania; the construction of a theater and amphitheater at Chamizal National Memorial on the Mexican border in El Paso, Texas, which will present bilingual theater; demonstrations of folk arts and crafts at Catoctin Mountain Park in Maryland; and folk singing at a number of areas.

For the past three years the Bureau of Reclamation has been documenting its water resources developments and conservation efforts through works of art. Some 40 artists have produced oil paintings, watercolors and drawings which will convey to future generations a feel for the emerging west of the 20th century. The works cover a full range of styles and display the talents of Peter Hurd, Norman Rockwell, Richard Diebenkorn, Jack Tworkov and Carl Morris, among others. Artists are nominated for participation by Dr. Lloyd Goodrich, former Director of the Whitney Museum of American Art.

Selected pictures from the Reclamation art collection were exhibited at the National Gallery of Art in Washington, D.C., this spring. A larger selection of these works is now on a tour of art museums throughout the country. A 27-minute motion picture, which shows the commissioned painters at work, is available for television use in cities and towns where the touring show is on exhibit. Eventually the paintings will be hung in visitor centers at major Reclamation projects and in other public buildings.

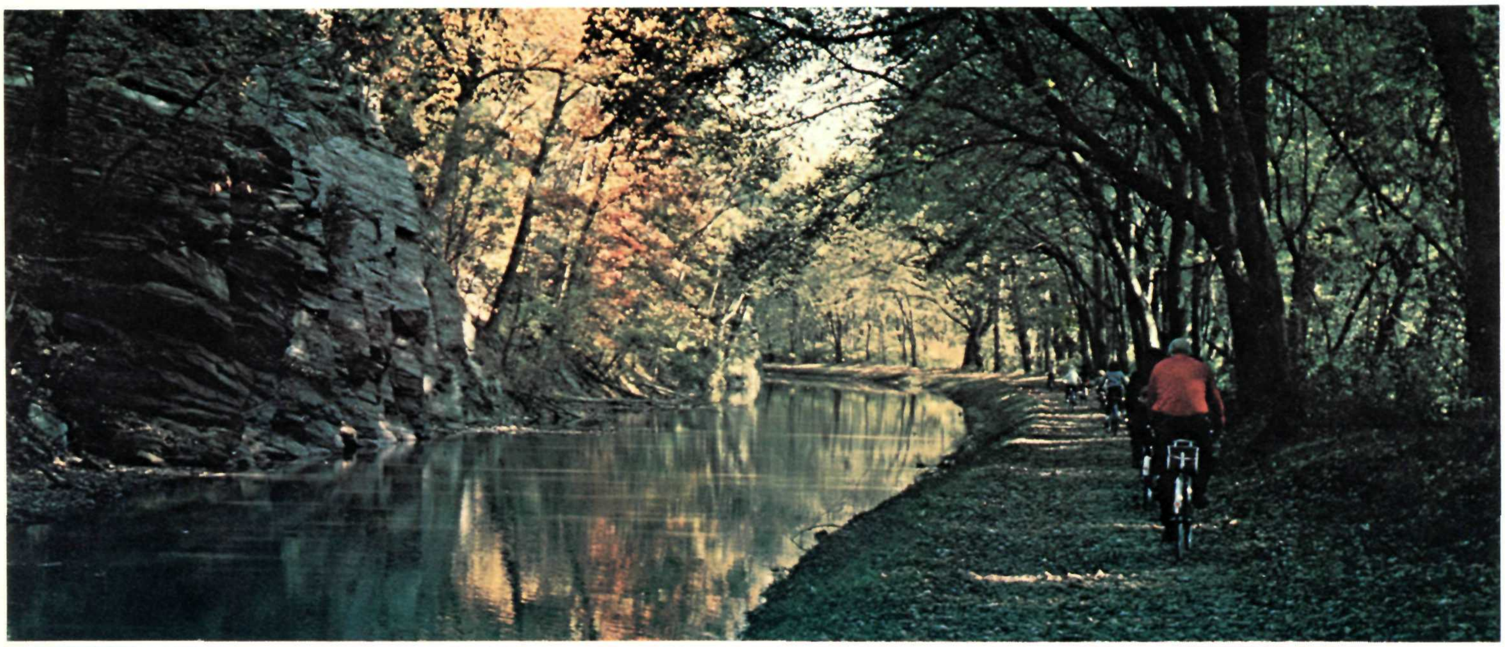


Painting of Banks Lake Feeder Canal by Ralston Crawford for Bureau of Reclamation art program.

The Fish and Wildlife Service is yet another Interior agency involved in the arts. Fine drawings of wildlife have long been a part of Service programs, thanks to the drawing skills of Robert W. Hines. Hines, a civil servant, works in his "penthouse" studio in the Main Interior Building—a room crowded with paintings of fish and wildlife and strewn with pertinent papers and books. This year, color reproductions of 10 original fish paintings by Mr. Hines were placed on sale. These pictures constitute Wildlife Portrait Series No. 2. The first Wildlife Portrait Series was composed of 10 color photographs of native American wildlife species.

The Fish and Wildlife Service conducts an annual contest to determine the design of the Federal Duck Stamp. These stamps must be purchased by every migratory-waterfowl hunter 16 years of age or older. Entries in the contest may be in pen and ink, oil, watercolor, etching, pencil or other drawing techniques. This year 213 entries were received from throughout the United States. The winner: Arthur M. Cook, an industrial art director. His full-color wash drawing of emperor geese will appear on the 1972–73 stamp.

Secretary Morton has promised that this is just the beginning of Interior's efforts to promote the arts. He has committed the Department in years ahead to use its resources throughout the nation to increase cultural awareness, declaring: "A nation aware of both its natural and cultural heritage has a firm foundation for the future. A nation expanding and experimenting in the arts soars with the vitality of life."



***INDIVISIBLY ONE*—Conservation Yearbook series, number eight, published by the U. S. Department of the Interior**

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GENERAL PHOTO LOCATIONS: Front Cover, (left) New York City, Wall Street Area; (right) Isle Royale, N.P., Mich.; Inside Front Cover Yellowstone, N.P., Wyo.; P.1 Redwoods, N.P., Calif.; P.2 (top left) Clouds; (far left) Wildflowers; (mid-top) Young Yellowstone, N.P. Elk, Wyo.; (mid bottom) Aspen trees, Wyo.; (bottom left) Atlantic Ocean; (right) Philadelphia, Pa.; P.4 (left) Isle Royale, N.P., Mich.; (mid) Carpenters' Hall, Independence Square, Phila, Pa.; (right) Salt Lake City, Utah; P.5 (left) Indian School Children; (mid) Heron, Everglades, N.P., Fla.; (right) Blue Ridge Pky, N.C.; P.6 (top) Glacial Lake, Sequoia and Kings Canyon, N.P., Calif.; (bottom left) Bu Mines Experimental Coal Gasification Plant; (bottom 2nd from left) Bridal Veil Falls, Yosemite, N.P., Califi; (bottom 3rd from left) Yellowstone, N.P., Wyo.; (bottom right) Oil Shale Research Facility, Rifle, Col.; P.8 The President's Office White House; P.13 (top) San Diego, Calif.; (bottom left) Delaware Water Gap; (bottom right) Rock Creek Park, Wash., D. C.; P. 14 (left) Dingmans Falls, Delaware Water Gap, near Milford, Pa.; (right) New Orleans, La.; P.16 San Francisco, Calif.; P.19 Grand Tetons, Wyo.; P.21 Proposed Bu. Mines Safety Academy, Beckley, W.Va.; P.22 Pitttsburgh, Pa. Mine; P.23 (center and right) Bu. Mines Bruceton, Pa. experimental mine; P.24 Interior Dept., Wash., D.C.; P.25 North Arctic, Alaska; P.27 Montana Stripmine; P.30 (top left and right) New York City, N.Y.; (center) transmission lines, Flaming George Dam, Utah-Wyo.; (bottom left) power plant generators at Glen Canyon Dam, Ariz.; (bottom right) subdivision, St. Paul, Minn.; P.34 Prudhoe Bay area, Alaska; P.35 home in Arctic Village, Alaska; P.37 Alaska; P.38 Four Corners Power Plant near Farmington, N. Mex.; P.39 offshore oil wells, Gulf of Mexico; P.43-44 Oil Shale rock, Colorado; P.45 Rifie Colorado experimental Oil Shale Facility; P.46 (left) Upper Geyser Basin, Yellowstone, N.P., Wyo.; (center Sonoma Co., Calif.; (right) Cerro Prieto, Mexico; P.48 (left) Power Plant, Ky.; (center) Gasification Pilot Plant, Rapid City, S.Dak.; P.51 (top) farmlands, Layton, Utah.; (mid) transmission towers, S.Dak.; (bottom) Shasta Lake, Calif.; P.52 Yellowtail Dam, Mont.; P.53 Flagstaff, Ariz. area; P.55 (top) Calif.; (bottom) testing lab, Off. Saline Water; P.56 (extreme top left) Guam; (top right) St. Croix, V.I.; (top left) Indian School Children; (mid left) Flathead Indian Res., Mont.; (mid right) Micronesia; (bottom) Pt. Barrow, Alaska; P.59 (both) Zuni Res.; N. Mex.; P.60 The President's Office, The White House; P.61 The Secretary of the Interior's Office, Wash., D. C.; P.62 (top bottom) 1. Crow Res., Mont.; 2. Indian Farm, Mont.; 3. Billings, Mont.; 4. Bechilota, N.Mex.; P.63 All photos U. S. Trust Territories of the Pacific; P.65 All photos, Guam; P.67 American Samoa; P.68 (left) Charlote Amalie, St. Thomas, V.I. (right) Christiansted, St. Croix, V.I.; P.69 (left) St. John, V.I.; (right) Charlote Amalie, St. Thomas, V.I.; P.70 (left) Baytown, Tex.; (right) San Bernardino, Calif.; P.72 (top left) Whooping Cranes; (top mid) Calif. Condor; (far right) Los Angeles, Calif. Suburbs; (bottom left) Fin Back whale; (mid bottom) Fla., Key Deer; P.73 Bald Eagles; P.74 Atlantic Salmon; P.75 Craigbrook Fish hatchery, Me.; P.76 Golden Eagle; P.77 Colorado Sheep; P.78 (top left) Kansas City, Kan.; (top right) Yosemite, N.P., Calif.; (bottom) Yellowstone, N.P., Wyo.; P.80 (both Old Faithful, Yellowstone, N.P., Wyo.; P.81 (top and mid) Yellowstone, N.P., Wyo.; (bottom) Yosemite, N.P., Calif.; P.82 Yellowstone, N.P., Wyo.; P.83 (left) Catoctin Mt. Pk. Md.; (right) Canyon De Chelly, N. Mont., Ariz.; P.84 (top) *Paria Canyon, Ariz-Utah; (mid) Aravaipa Canyon, Ariz.;* (bottom) Grand Gulch, Utah; P.85 (top) Dark Canyon, Utah; (mid) Bear Trap Canyon, Mont.; (bottom) Humbug Spires, Mont.; P.87 (top) Lewis and Clark Trail, Idaho; (mid.) Arizona; (bottom) C and O Canal, Md.; P.88 Rogue R., Ore.; P.89 Rio Grande R., N. Mex.; P.60 (top to bottom) 1 and 2 Death Valley, Calif.; 3 Ariz.; 4 Calif.; P.91 (top to bottom) 1. New York City, N.Y.; 2. Wash., D.C.; 3. Baton Rouge, La.; 3. Wash., D. C.; P.62 (left and mid) Calif.; (right) Yellowstone N.P., Wyo.; P.93 Alexandria, Va.; P.94 (top) Wolf Trap Farm Pk., Vienna, Va.; (bottom) figurine by Duffy Wilson, N.Y.; P.95 (all photos) Wash., D.C.; Inside Back Cover, C and O Canal, Md.; Back Cover, Cosmos flower with NASA photo of our earth taken from outer space.

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. . . All the indicators point to a new era of conservation and environmental preservation. The signs of a dawning environmental conscience are appearing. Its seeds are being sown throughout the land . . . in government . . . in industry . . . in the universities . . . in the home . . . everyone is an environmentalist.
"

Secretary of the Interior Rogers C. B. Morton
from an address at Princeton University